INDIANA DEPARTMENT OF TRANSPORTATION

STANDARDS COMMITTEE MEETING

Driving Indiana's Economic Growth

APPROVED MINUTES

May 16, 2008

MEMORANDUM

TO: Standards Committee

FROM: Mike Milligan, Secretary

RE: Minutes for the April 17, 2008 Standards Committee Meeting

The Standards Committee meeting was called to order by the Chairman at 9:05 a.m. on April 17, 2008 in the N755 Bay Window Conference Room. The meeting was adjourned at 12:30 p.m.

The following members were in attendance:

Mark Miller, Chairman
Jim Reilman, Constr. Mgmt.*
Ron Heustis, Constr. Mgmt.
Larry Rust, Traffic Control
Ron Walker, Materials Mgmt.
Shakeel Baig, Crawfordsville Dist.
Dave Andrewski, Pvmt. Engineering
Bob Cales, Contract Admin.
John Wright, Roadway Services
Anne Rearick, Structural Services
Jim Keefer, Fort Wayne Dist.

* Proxy for Dennis Kuchler

Also in attendance were the following:

Mike Milligan, Secretary
Tom Harris, INDOT
Mir Zaheer, INDOT
Athar Khan, INDOT
Deb Hood, INDOT
Eric Carleton, Indep. Conc. Pipe
John O'Sullivan, Tyson Corp.
Eric Wathen, Rinker Materials
Paul Berebitsky, ICA
Tom Duncan, FHWA

Page No.

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

1. Approval of March 20, 2008 Minutes

Approved.

Motion: Mr. Andrewski, Second: Mr. Wright, Ayes: 10, Nays: 0

2. Formation of 205 Sub-committee 4

Approved.

The Standards Committee requested that the sub-committee add a member from Geotech Engineering and a District representative (TBD). Ron Walker requested that Todd Tracy be removed as a regular member of the Committee and only contacted as needed. Requested chair Tom Harris to provide a scope of work and timeline to the Standards Committee.

3. Update report from Document Management Committee

The Document Management Committee has rescheduled their meeting for 4/30/08. A report will be made at the May Standards Committee meeting.

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

1. 701 Driven Piling Specifications 5

LRFD and other issues need to be addressed. The Committee authorized Jim Reilman to form a 701 sub-committee with 6 to 8 members. Members should include Geotech, Districts and a consultant. Final specifications are needed by November 2008 Standards Committee meeting in order to be included
in the 2010 book.

2. QC/QA HMA Smoothness Pay Factor Issues 6

The Committee agreed that a short term resolution should be to limit payment for smoothness bonuses to only QC/QA HMA intermediate and surface mixes. This is their recommendation to the 400 sub-committee. The Committee also agreed that it is time to examine the usefulness of smoothness specs in general, for both HMA and PCCP. Mark Miller will form a “Smoothness” sub-committee to begin examining all aspects.

3. Standardization of Terminology – Reinforcing Bars and Reinforcing Steel 7

Agreed that an editorial change should be made to eliminate the use of the word “steel” when referring to reinforcing, unless there are specific instances where it is the only appropriate term. Jim Reilman will work with Sharman Chumbley to find all instances of “steel” in relation to reinforcement and the changes will be made for the 2010 book. All RSPs and Standard Drawings will need to be examined also.

C. RECURRING SPECIAL PROVISIONS PROPOSED ITEMS

(No items on this agenda)

D. STANDARD SPECIFICATIONS AND STANDARD DRAWINGS PROPOSED ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

Item No.	Sponsor	
Item 08-9-1	Mr. Kuchler	9
619	PAINTING BRIDGE STEEL	
ACTION:	Passed as revised	
Item 08-9-2	Mr. Heustis	31
628-R-XXX	FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS AND OFFICE MACHINES	
ACTION:	Passed as revised	
Item 08-9-3	Ms. Rearick	44
714-R-XXX	CONCRETE BOX STRUCTURES	
ACTION:	Passed as revised	
Item 08-9-4	Ms. Rearick	55
Standard Drawings	714-BCEX-01 and 02	
ACTION:	Passed as revised	

cc: Committee Members (11)
FHWA (1)

Mr. Miller
Date: 4/17/08

A. GENERAL BUSINESS ITEMS

2. FORMATION 0F 205 SUB-COMMITTEE

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The 205 section has not been revised for several years. Since that time many changes have taken place in the field of erosion control. Numerous new products are now available that are effective and should be considered to be allowed and/or required for use by INDOT contractors.

PROPOSED SOLUTION: Several Items/Methods to be considered by the subcommittee:

- Polyacrylamide (PAM) for slope stabilization
- Filter Bags for use in dewatering operations
- Manufactured Inlet filters
- Contractor's responsibility for updated erosion control plan
- Contractor's responsibility for sediment control
- Pay items

Suggested members:

- Tom Harris, Field Engineer
- Nathan Saxe, Environmental Services
- Todd Tracy, Materials Management
- Michele Allen, Environmental Services
- Rich Phillabaum, Environmental Services
- IDEM Representative
- IDNR Representative
- Terry Noriega, Drainage Solutions, Inc. Vender/Manufacture
- Contractor

APPLICABLE STANDARD SPECIFICATIONS: Section 205, portions of Section 108

APPLICABLE STANDARD DRAWINGS: Potential to affect all of the E-205-XXXX standard drawings

APPLICABLE DESIGN MANUAL SECTION: Part 4, Chapter 37

APPLICABLE SECTION OF GIFE: Current GIFE covers erosion control in Section 51

APPLICABLE RECURRING SPECIAL PROVISIONS:108-C-192

Submitted By: Tom Harris

Title: Field Engineer, Division of Comstruction Management

Organization: INDOT

Phone Number: 317-232-4910

Date: March 20, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT?

Mr. Miller
Date: 4/17/08

B. CONCEPTUAL PROPOSAL ITEMS

1. 701 DRIVEN PILING SPECIFICATIONS

CONCEPTUAL
PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Portions of the 701 Driven Piling specification are outdated.

PROPOSED SOLUTION: Industry has approached the INDOT Office of Geotechnical Engineering and requested that INDOT consider revising and updating the pile driving specification to reflect a growth in knowledge of techniques and technology upgrades and advancements. The last thorough review on this specification was 12 years ago. This specification also needs to be updated to incorporate LRFD requirements.

APPLICABLE STANDARD SPECIFICATIONS: 701

APPLICABLE STANDARD DRAWINGS: TBD

APPLICABLE DESIGN MANUAL SECTION: TBD

APPLICABLE SECTION OF GIFE: new GIFE section 701

APPLICABLE RECURRING SPECIAL PROVISIONS: TBD

Submitted By: Ron Heustis

Title: Manager, Office of Construction Technical Support

Organization: INDOT

Phone Number: 317-234-2777

Date: March 19, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT? TBD

Mr. Miller
Date: 4/17/08

B. CONCEPTUAL PROPOSAL ITEMS

2. QC/QA HMA SMOOTHNESS PAY FACTOR ISSUES

CONCEPTUAL
PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Currently, 401.19(c) does not clearly identify which cross section elements should be included in calculation of Q_C/Q_A HMA pavement pay factors. As a result, the specification is not applied consistently and differing interpretations result in conflict in the field.

PROPOSED SOLUTION: Provide guidance to specification subcommittee on development of a revised specification to clearly identify which cross-sectional elements are to be considered for pay factor under 401.19(c). Clarify specification to avoid inconsistent interpretation.

APPLICABLE STANDARD SPECIFICATIONS: 401.18, 401.19

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: Chapter 52

APPLICABLE SECTION OF GIFE: 8-17, 13-20, 13-23, New GIFE Section 401

APPLICABLE RECURRING SPECIAL PROVISIONS TBD

Submitted By: Ron Heustis

Title: Manager, Office of Construction Technical Support

Organization: INDOT

Phone Number: 317-234-2777

Date: March 20, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT? TBD

Mr. Miller
Date: 4/17/08

B. CONCEPTUAL PROPOSAL ITEMS

3. STANDARDIZATION OF TERMINOLOGY – REINFORCING BARS AND REINFORCING STEEL

CONCEPTUAL
PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Currently the INDOT specifications reference both "reinforcing bars" and "reinforcing steel" and has pay items for both. This is the same material and has caused confusion.

PROPOSED SOLUTION: Make a thorough editorial revision to the Standard Specifications making all references for this material "reinforcing bars". Reinforcing bars was decided upon after considering that there is already a specification for reinforcing bars (703) and a Standard Drawing for bar bending details(703-BRST-01). There are no sections for "reinforcing steel". Furthermore, steel is a material that reinforcing bars can be made from (and is identified in 910.01). INDOT continues to receive requests to use materials other than steel for reinforcing, fiber reinforced polymer being one. If another material becomes viable for use as reinforcing and the term "reinforcing bars" is used, changes to allow this other material will only need to be an additional paragraph to the 900 section. If the term "reinforcing steel" is used and another viable material becomes available, this term will no longer accurately describe the item.

APPLICABLE STANDARD SPECIFICATIONS: 101.74, 111.02, 111.09, 202.03(b), 503.08, 506.07(a), 602.02, 602.03(b), 605.02, 605.10, 607.02, 607.06, 614.02, 615.02, 701.02, 701.09(f), 701.14, 701.15(c), 702.10, 702.13(e)2, 702.20, 702.27, 702.28, 703.06, 704.01, 704.02, 704.04, 704.06, 704.07, 704.08, 705.02, 705.03, 705.04, 706.02, 706.03, 706.05, 706.06, 707.02, 707.04(a), 707.04(b), 707.04(c), 707.10, 707.12, 708.04, 710.02, 710.03(a), 710.03(b), 710.03(c), 710.07, 714.02, 714.04, 714.04(a), 714.04(b), 714.07, 714.08, 715.02, 715.10, 715.13, 715.14, 717.02, 717.03, 717.08, 717.09, 718.02, 718.09, 719.02, 720.02, 720.06, 722.05(a)2, 722.05(b), 722.06(a)1, 722.07, 723.02, 723.03, 723.04(b), 723.19, 724.05, 802.02, 802.12, 805.16, 807.03, 807.19, 910.01(a), 910.01(b)3, 910.01(c), 921.02(d)3a

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

Submitted By: Ron Heustis

Title: Manager, Office of Construction Management

Organization: INDOT

Phone Number: 317-234-2777

Date: March 19, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT?

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: There are continued problems with painting contracts. Due to numerous reasons, INDOT does not have a good handle on whether or not a bridge has existing hazardous (lead, chromium, etc…) coatings or non-hazardous coatings. INDOT has received an increasing number of change orders for contracts that were let, advertising the existing coating as non-hazardous and when the paint sample results return from the lab, the existing coating is hazardous. This has resulted in several disagreements over price adjustments and time extensions with contractors and large change orders.

PROPOSED SOLUTION: Update the 619 section and add Pre-Established Remedies for Changed Conditions to address the three situations that may arise due to uncertainty of the existing coating type. Create a design memorandum technical advisory that notifies the designers of the pay items to be used.

APPLICABLE STANDARD SPECIFICATIONS: 619

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: new GIFE sections 619

APPLICABLE RECURRING SPECIAL PROVISIONS: None

Submitted By: Dennis Kuchler

Title: State Construction Engineer

Organization: INDOT

Phone Number: 317-232-5502

Date: April 9, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT? Bridge Painting Subcommittee for the 619 rewrite.

Since there is no known industry group representing the bridge painting contractors, a meeting was held in December 2007 in which INDOT invited all of the prequalified painting contractors. The proposed changes to the 619 section were discussed with them and they were provided an opportunity to comment.

REVISION TO 2008 STANDARD SPECIFICATIONS

SECTION 619, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 619 – PAINTING BRIDGE STEEL

619.01 Description

This work shall consist of preparing surfaces and applying paint to steel bridges in accordance with ~~these specifications~~ *105.03* ~~or as directed~~.

MATERIALS

619.02 Materials

Materials shall be in accordance with the following:

Epoxy Intermediate Paint	909.02(b)
Finish Coat for Weathering Steel	909.02(e)
Multi-Component Inorganic Zinc Primer	909.02(a)1
Organic Zinc Primer	909.02(a)2
Polyurethane Finish Coat	909.02(c)
~~Single Component Inorganic Zinc Primer~~	~~909.02(a)2~~
Structural Steel Coating Systems	909.03
Waterborne Finish Paint	909.02(d)

Material safety data sheets shall be provided in the QCP for all materials to be delivered to the project site.

CONSTRUCTION REQUIREMENTS

619.03 Quality Control and Quality Assurance

The Contractor shall be responsible for the quality of work on the contract and shall ensure that all work has been performed by accepted quality control methods. A QCP shall be prepared and submitted by the Contractor in accordance with ITM 803. ~~The QCP shall contain information specific to each bridge in the contract and shall be well organized in content. The QCP shall be submitted at least 15 work days prior to commencing this work.~~ No work may begin until written notice has been received that the QCP was accepted by the Engineer. The ~~QCP~~ *QC* manager shall furnish the current ~~SSPC Structural~~ *referenced* ~~Steel Painting Manual, Volumes 1 and 2,~~ *SSPC Standards* at the project site.

~~The painting Contractor shall be~~ *Cleaning and painting shall be done by a Contractor* certified *as* SSPC-QP ~~1~~*2* for cleaning and painting *existing* bridge steel *on steel bridges constructed before 1995, regardless of whether the existing coating is advertised as non-hazardous based or hazardous based.* ~~*The Contractor shall be*~~ *Cleaning and painting shall be done by a Contractor that at a minimum is certified* ~~*at a minimum of*~~ *as SSPC-QP 1 for cleaning and painting new bridge steel or for cleaning and painting existing bridge steel on steel bridges constructed after 1994.* ~~which does not have lead coatings and certified SSPC-QP 2 for cleaning and painting bridge steel which does have lead based coatings. Evidence of the certifications shall be provided in the QCP. A QCP manager and QC technicians shall also be identified in the QCP.~~

The Department will accept work performed on the project through quality assurance inspections and testing. Acceptance testing will be performed and will be the basis for which acceptance will be made.

(a) Acceptance Testing Definitions

The following definitions of terms shall apply to acceptance testing of painting steel bridge work.

1. Lot

A lot shall be a series of tests performed on each phase for each ~~1076~~ *1000* sq ft (~~100~~ *93* m^2) or portions thereof.

2. Series

A series shall be 10 random tests performed by the Engineer on a lot.

3. Phase

A phase shall be painting operations consisting of either the cleaning of steel or the application of each coat of paint.

(b) Testing Procedure

During acceptance testing, the results of the random testing within a series will be compared to the specified requirements for that phase of work. A series of spot measurements spaced evenly over each lot will be made. The average of *the* 10 spot measurements for each lot shall not be less than the specified thickness. A single spot measurement in any lot shall not be less than 80% ~~*80.0 percent*~~ of the specified thickness. A reading below the minimum of the average of 10 spot measurements less than the specified thickness shall be considered a defect. If there is only one defect for the series of tests, the lot will be accepted provided there are no visual defects. If two defects are found in the first series of tests, then a second series of tests for each lot shall be measured. If three defects are found in the first series of tests, then the lot fails. If the first and second series of tests have four or less defects, both series pass. If there are more than four defects, then the lot fails.

If a lot fails, corrective action shall be taken to make the lot acceptable. Corrective action shall be submitted in writing and performed as approved. A failed lot shall not be covered until the whole lot has been accepted.

(c) Test Methods and Procedures

The current version of the following test methods and procedures shall be performed as a minimum for quality control by the Contractor. These and other tests may be performed for acceptance testing by the Engineer.

TEST/PROCEDURE	METHOD AND PROCEDURE
Surface Profile	ASTM D 4417
Clean Compressed Air	ASTM D 4285
Cleaning of Steel	SSPC Vis 1, Vis 3~~, and ISO 8501-1~~
Cleanliness of Recycled Ferrous Metallic Abrasives	*SSPC AB 2*
Dry Film Thickness	SSPC PA 2

State of Cure of Inorganic Zinc Primers .....ASTM D 4752
Relative Humidity .....ASTM E 337

619.04 Prosecution of Work

Prosecution of work shall be in accordance with the applicable requirements of 108.03. Once the ~~operations of~~ cleaning and painting *operations* have begun, it shall be performed on all work days without stoppage until all work has been completed. If the contract contains more than one bridge, a schedule shall be included in the QCP which provides the sequence of work on the bridges. ~~When~~ *Once* work has begun on a bridge, it shall be performed until complete, including all cleanup.

Permission shall be obtained in writing to start or continue work at the hold points as follows:

(a) prior to the acceptance of the QCP and start of work;
(b) immediately following ~~a~~ *each phase of* surface preparation ~~phase~~;
(c) immediately before the application of the first coat;
(d) prior to the application of each succeeding coat; and
(e) after the final coat has cured.

A minimum of one day's notice shall be given in advance of each of the hold points.

619.05 Inspection Access to Bridges

Safe and reasonable access to all points of the bridge shall be provided for the Engineer's inspections immediately upon request. ~~The inspection access equipment shall be obtained, maintained, and kept in safe working order.~~

619.06 Maintaining Traffic

The traffic lanes may be restricted when surface preparation or painting phases are being performed on a portion of the bridge over the traveled roadway, or as directed, when the need exists. ~~A traffic maintenance plan shall be provided in the QCP and shall be in accordance with the plans.~~

Construction signs in accordance with 801.04 shall be furnished and placement at each project site shall be as shown in the QCP. However, a "Bridge Painting Ahead" sign may be used in place of the "Road Construction Ahead" sign.

The traffic maintenance plan shall include a type of barrier system which shall protect against blasting of vehicles or pedestrians, eliminate abrasive materials and debris from falling onto the traveled portion of the pavement, and prevent the spreading of abrasive materials and debris in the area which may create a traffic hazard. If the intended purpose of the protective devices has not been accomplished, work shall stop until adequate corrections have been made. All abrasive material or debris shall be removed by the end of each day's work in accordance with 619.07.

619.07 Environmental and Safety Requirements

Pollution control and waste disposal of existing paint *residue* and debris shall be in accordance with the following requirements.

~~The QCP shall contain a written description of the Contractor's hazardous waste training program in accordance with 40 CFR 265.16 and ITM 803. Likewise, the waste contingency plan shall be contained in the QCP and in accordance with ITM 803.~~

~~A health and safety plan shall be provided in the QCP and in accordance with ITM 803.~~ Workers shall be protected in accordance with IOSHA requirements. All personnel on the project site shall wear personal protective equipment. The protective equipment shall be furnished by the Contractor, including to Department personnel. Training shall be given to all personnel provided with the protective equipment. Protective equipment shall include, but not be limited to, clean air supplied respirators, air purifying respirators, conventional hood as applicable, eye protection, and protective clothing. Two rooms for changing and washing shall be provided on ~~lead primed~~ bridges *containing hazardous-based coatings*.

(a) Pollution Control

~~The containment procedure plan shall be provided in the QCP. The telephone numbers for the IDEM Emergency Response Branch, local health department, and all water intake users within 500 ft (150 m) shall be provided in the QCP.~~

Blasting materials, scrapings, wire brushings, and paint particles shall be contained in accordance with SSPC-Guide 6 ~~(CON)~~, Class ~~3~~*2A with method A, level 2 emissions*, specifically for ~~zinc~~ *non-hazardous* primed bridges, and SSPC-Guide 6 ~~(CON)~~, Class 2*A or better with method A, level 0 emissions*, for ~~lead~~ *hazardous* primed bridges.

If a spill, as defined in IDEM Regulation 327 IAC 2-6.*1* does occur, all work shall stop and immediate action shall be taken to clean up the site. Spills of materials, which enter or threaten to enter the water, shall be handled in accordance with IDEM Regulation 327 IAC 2-6.*1*. The IDEM Emergency Response Branch, the local health department, and all water intake users within 500 ft (150 m) of the bridge shall be immediately contacted and advised of the spill. Written documentation of all such contacts and actions shall be kept. All applicable Federal, State, and local rules and regulations described in 619.07(b)1 shall be observed.

On *existing* bridges with ~~lead paint,~~ *hazardous-based coatings, either* steel grit blasting abrasives *in accordance with SSPC AB 1* shall be used and recycled~~. The~~ *or mineral/slag blasting abrasives in accordance with SSPC AB 3 shall be used and the waste residue generated shall be treated at a facility rendering it to a non-hazardous state and disposed of in accordance with all applicable Federal, State, and local regulations. If steel grit blasting abrasives are used, the* recycling equipment shall be capable of separating the blasting abrasive from the paint debris.

Each bridge shall generate a separate waste stream and shall not be commingled with other materials. The *first sample of waste* residue from the bridge shall be sampled ~~within~~ *after* the first ~~five days~~ *day* of removal and shipped to be tested *within 24 hours in a manner agreed to by the Department and as described in the QCP. The Engineer will witness the extraction of each waste residue sample. The Department will maintain custody of each waste residue sample until it is shipped. A duplicate of each waste residue sample will be retained by the Department. Each waste residue sample shall be taken by random method as described in the QCP which reflects representation of the*

entire bridge. Each waste residue sample shall represent approximately 25% ~~*percent*~~ *of the cleaning area. All samples shall be analyzed for full Toxicity Characteristic Leaching Procedure (TCLP).* Residue shall be placed in an approved container. Such containers shall be ~~properly~~ labeled and maintained to comply with 40 CFR 264.

No waste shall remain on the booms or on ~~the~~ *any* water surface overnight. All blasting debris shall be cleaned up after each day's work. All waste material shall be properly stored at the project site to prevent loss or pollution.

If hazardous materials are found in the first or subsequent waste residue sample of an advertised, non-hazardous site, the Contractor shall immediately stop all ~~*work*~~ *cleaning and painting operations on that bridge. The Contractor shall notify the Engineer that hazardous materials have been found and, if not addressed in the QCP, the Contractor shall submit revisions to the QCP that detail the necessary changes due to the presence of hazardous materials. The Contractor shall not return to work until the revised QCP is approved in writing.* ~~*No additional time will be granted as a result of delays incurred while preparing and submitting a revised QCP.*~~

(b) Waste Disposal

Disposal of existing paint *residue* and debris shall be in accordance with SSPC-Guide 7 ~~(DIS)~~ and the following requirements.

1. Laws to be Observed

Federal and State laws and regulations regulate the disposal of bridge painting debris. Bridge paint debris shall be manifested or certified and shall be disposed of at an appropriate disposal facility.

The Contractor shall have direct knowledge regarding compliance with laws pertaining to pollution control and waste management such as follows.

a. subtitle C of the Resource Conservation and Recovery Act, 40 CFR 261, 262, 263, 265, and 268;

b. the Solid Waste Rule, 329 IAC ~~2~~ *10*;

c. the Hazardous Waste Rule, 329 IAC 3.*1*;

d. the Air Pollution Rule ~~326~~ *329* IAC *6*-4;

e. the Water Pollution Rule, 327 IAC 2-6.*1*;

f. the United States Department of Transportation regulations 49 CFR 172.300; and

g. OSHA worker safety regulations 29 CFR 1926.

2. Time Limitations

The maximum time limit from the date the generated waste is placed in a container and the date the material is transported to a permitted treatment, storage, and disposal facility shall be 90 calendar days.

3. Marking of Spent Material Containers

Spent material containers shall be marked with the date that waste *residue* is first placed in the container. Until laboratory results are received concerning the category of the waste *residue*, the containers shall be labeled "LEAD PAINT WASTE DEBRIS" or "ZINC PAINT WASTE DEBRIS", as appropriate. *The labeling shall include the contract number, bridge number, sample number, and sample date.* Labeling of containers as hazardous waste will not be required until the appropriate laboratory analysis determines the waste *residue* to be hazardous in accordance with the current *Resource Conservancy Recovery Act* (RCRA) hazardous waste definitions. Immediately upon notice that the waste *residue* is hazardous, the containers shall be marked in accordance with 49 CFR 172, Subpart D.

4. Instruction for Disposal of Paint Waste *Residue*

Sampling and analysis of the paint waste ~~debris~~ *residue* shall be performed to determine if the wastes are hazardous. If the waste *residue* is not found to be hazardous in accordance with current RCRA hazardous waste definitions, the waste *residue* material shall be disposed of at an appropriate disposal facility. If the waste *residue* is found to be hazardous, IDEM ~~shall~~ *will* be notified and an EPA identification number will be obtained ~~by the Department~~. This *number* will be provided to the Contractor within 30 days of the start of waste generation for bridges having hazardous waste paint debris. The waste *residue* from different bridges shall not be mixed. The Contractor shall have the *following* responsibilities ~~as follows~~:

a. determining the location for disposal, treatment, or recycling of the waste *residue*, obtaining the Engineer's approval of the site, and arranging with the approved site for acceptance of the materials;

b. preparing a hazardous waste manifest, as required by Federal and State requirements, for signature;

c. scheduling the shipment of waste *residue* to the permitted disposal site;

d. ensuring that the hazardous waste manifest is carried in the transportation vehicle;

e. ensuring that all required hazardous materials placards are properly displayed on the vehicle;

f. ensuring prompt movement of the vehicle to the disposal site; and

g. returning one copy of signed manifest documents to the Engineer. A copy of the chemical and physical analysis of the waste, all deposit receipts, manifests, and required paperwork for disposal shall be given to the Engineer and all waste *residues* disposed of before the contract will be accepted.

~~The waste disposal site shall be identified in the QCP.~~

5. Instructions for Disposal of Other Project Generated Waste

The other wastes that may be generated on the project include, but are not limited to, spent solvents from cleaning of equipment and empty or partially empty containers of paint, paint thinners, spent abrasives, and solvents. The Contractor shall recycle or dispose of all project-generated waste materials.

If the waste is defined as a hazardous waste in accordance with the current RCRA definitions, the waste shall be recycled or disposed of in accordance with 619.07(b)4. All project generated waste and the method of recycling or disposal shall be identified in the QCP.

619.08 Surface Preparation

Cleaning of steel surfaces shall be performed by ~~a~~ *an* SSPC certified contractor. This requirement will not apply to the following:

(a) shop cleaning~~,~~*;*

(b) bearings at end bents~~,~~*;*

(c) small sections of beams at end bents or at piers with open joints~~,~~*;* or

(d) small sections of beams or other structural members where heat-straightening or similar repairs have taken place.

Surfaces to be painted shall be cleaned in accordance with *the* SSPC classification, unless otherwise specified. ~~The latest cleaning comparison chart available shall be provided in the QCP.~~ Compressed air shall pass through an oil and water extractor before entering another apparatus.

Field cleaned steel surfaces shall be primed the same day as cleaned. If rust forms after cleaning, the surface shall be cleaned again before painting. Work shall be stopped when there is disagreement about whether a surface has been adequately cleaned. Written notification shall be provided specifically identifying the problem.

Cleaning shall be scheduled so that dust or other contaminates do not fall on wet, newly painted surfaces.

A dust collector~~, that according to the manufacturer's recommendations, is~~ suitable for the containment type and size shall be used during all blast cleaning operations in preparation for all structural steel paint systems and as directed for a partial paint system.

The surface profile of cleaned new steel surfaces shall not be less than 1 mil (25 µm) and not greater than 2 mil (50 µm). The surface profile of cleaned existing steel shall not be less than 1 mil (25 µm) and not greater than 3 mil (75 µm).

Pressure washing in accordance with 619.08(a) and solvent cleaning in accordance with 619.08(b) shall be performed *to remove all oils and soluble salts* before all other cleaning methods *are started. The Contractor may propose alternate cleaning methods in the QCP that will accomplish the removal of all oils and soluble salts.*

(a) Pressure Washing

All surfaces to be painted and the tops of pier and abutment caps shall be washed. The washing shall be accomplished by means of a low pressure power water washer with potable water. The pressure shall be between 800 and 1500 psi (5 and 10 MPa). If detergents or other additives are added to the water, the surface shall be rinsed with potable water before the detergents dries. All washed surfaces shall be completely free of all ~~foreign matter~~ *oils and soluble salts* and shall be approved prior to other surface preparation activities.

(b) Solvent Cleaning

After pressure washing has been approved, solvent cleaning shall be in accordance with SSPC-SP1.

(c) Near-White Blast Cleaning

Near-white blast cleaning shall be in accordance with SSPC-SP10/NACE No. 2.

(d) Commercial Blast Cleaning

Commercial blast cleaning shall be in accordance with SSPC-SP6/NACE No. 3.

(e) Hand Tool Cleaning

Hand tool cleaning shall be in accordance with SSPC-SP2.

(f) Brush-Off Blast Cleaning

Brush-off blast cleaning shall be in accordance with SSPC-SP7/NACE No. 4.

(g) Power Tool Cleaning

Power tool cleaning shall be in accordance with SSPC-SP3.

(h) Power Tool Cleaning to Bare Metal

Power tool cleaning to bare metal shall be in accordance with SSPC-SP11.

All mill scale shall be removed, except for that mill scale which remains in the lower portion of deep pits. The Engineer will determine the amount of mill scale that is to remain.

619.09 Paint Systems

Paint systems shall be applied in accordance with the manufacturer's recommendations. The dry film thickness of a paint coating will be measured with a calibrated film thickness gauge *in accordance with SSPC PA 2. All paint coatings shall have a dry film thickness not less than 80% ~~percent~~ of the required dry film thickness.*

(a) Structural Steel Paint System

The coating system shall consist of an inorganic zinc primer with a dry film thickness of 3 mil (75µm), an epoxy intermediate coat with a dry film thickness of 4 mil (100 µm), and a polyurethane finish coat with a dry film thickness of 3 mil (75 µm) for the painting of steel bridges and other structural steel.

(b) Partial Paint System

The coating system shall consist of organic zinc primer with a dry film thickness of 3 mil (75 µm) and a waterborne finish coat with a dry film thickness of 3 mil (75 µm) for partial painting of steel bridges and other structural steel.

619.10 Painting

Painting shall be performed by a SSPC certified contractor, except as noted in 619.08. ~~All technical data sheets containing the manufacturer's recommendations and instructions shall be provided in the QCP and in accordance with ITM 803.~~

Concrete at all junction points of concrete and steel shall be adequately shielded or otherwise protected so the application of paint on steel is full and complete, and that spraying onto the concrete is minimized.

If a blasted or painted surface is unsatisfactory, removal of the paint, thorough cleaning of the surface, and repainting or other correction will be required as directed. Where defects or damages occur in a film of any coating, all defective areas shall be removed to soundly bonded paint or bare steel and painted to the specified thickness.

No lettering shall be painted on bare or painted steel surfaces, except marks required for erection and project information stenciled in accordance with 619.10(g).

~~All joints~~ Joints of all lapping members shall be caulked after either the application of the epoxy intermediate coat of the ~~Structural~~ structural ~~Steel~~ steel ~~Paint~~ paint ~~System~~ system or the application of the organic zinc primer of the ~~Partial~~ partial ~~Paint~~ paint ~~System~~ system. ~~This~~ The intermediate or primer coat shall be cured to the manufacturer's recommended coating cure time prior to caulking. The caulk used shall be compatible with either the ~~Structural~~ structural ~~Steel~~ steel ~~Paint~~ paint ~~System~~ system or the ~~Partial~~ partial ~~Paint~~ paint ~~System~~ system, and in accordance with the paint manufacturer's recommendations as described in the QCP.

1. *All vertical and diagonal lapping members shall be caulked along the top and sides. The bottom shall remain open for drainage.*

2. *All horizontal lapping members shall be caulked ~~on the leading edge, in relation to traffic flow of the primary roadway, and sides~~ along the leading edge and sides of steel members facing toward oncoming traffic or facing toward the prevailing wind direction.*

3. *All horizontal members shall remain uncaulked along the side of steel members facing away from oncoming traffic or prevailing wind direction.*

(a) Weather Limitations

Field painting will not be permitted between November 15 and the following April 1 *unless requested in the QCP and approved in writing*. Painting shall begin only when the 24 h ambient temperature is to remain above 50°F (10°C) after paint application, and the steel surface temperature is between 50 and 100°F (10 and 40°C). Coating and curing shall be done only when the relative humidity is to remain between 30 and 80% ~~*percent*~~. ~~All variations of these weather limitations to allow the use of any coating below the minimum or above the maximum temperature or humidity as may be~~

~~recommended by the manufacturer shall be provided in the QCP.~~ The pot life and induction time shall be in accordance with the manufacturer's recommendations for the existing temperature and humidity.

Paint shall not be applied when the air is misty, or when conditions are otherwise unsuitable. The surface temperature of the steel to be painted shall not be within 5°F (3°C) of the dew point. When painting in a protected area to eliminate the above conditions, the steel shall remain under cover until the paint is dry. All wet paint which has been exposed to excessive humidity, rain, snow, or condensation shall be permitted to dry. Damaged paint shall then be removed. The surface shall be re-cleaned and repainted as directed. The Engineer will be the sole authority to decide when work may begin or shall stop due to weather conditions.

(b) Storage

Paint shall be stored in accordance with the manufacturer's recommendations. If paint is permitted to remain in storage, the containers shall be turned end for end at least once per week. The paint shall be used within the manufacturer's recommended shelf life.

(c) Mixing

Paint shall be thoroughly mixed so that the pigment is completely in suspension and the consistency is uniform. Mechanical mixers shall be used in accordance with the manufacturer's instructions. The paint shall remain in this condition during application to the steel surface. After initial mixing and before application, zinc primer shall be strained through a metal screen not coarser than the No. 30 (600 μm) sieve.

Partially empty containers of paint shall not be used. Partial mixing of containers will not be permitted. All paint containers shall remain closed until needed for mixing.

(d) Thinning

When required for proper application, the thinning of field paint will be permitted. Only thinners recommended by the manufacturer and as approved shall be used. Thinners shall be added to paint in accordance with the manufacturer's recommendations. The maximum quantity added shall not exceed the manufacturer's recommendations. The thinned paint shall not exceed IDEM regulations for volatile organic compounds.

The Contractor shall contact IDEM and the local air pollution control board for information about any volatile organic compound regulations or restrictions. ~~Proof of contact to these agencies shall be provided in the QCP.~~

(e) Application of Paint

All paint coatings shall be of colors to produce a distinct contrast with adjacent coatings, including the color of a clean steel surface.

Paint shall be applied by either an airless or conventional spray method which has been recommended by the paint manufacturer. The compressed air used for painting shall pass through an oil and water extractor before entering the paint pot. However, areas to be painted which are inaccessible to spray application or areas requiring touchup may be painted with brush or daubers. Epoxy intermediate and polyurethane finish paints may be applied by brushes or rollers provided the coating cures to a smooth and uniform finish.

Spray shall be adjusted to produce a uniform coating. ~~All~~ *If using the structural steel paint system in accordance with 619.09(a), all* 90 degree edges shall be striped *on the second and third coats*, and then repainted with the remaining steel surfaces. ~~Painting techniques shall minimize dry overspray. Dry overspray shall be removed prior to application of other coatings and after application of the finish coat.~~ *If specified, the stripe coat shall be allowed to dry to the manufacturer's recommended recoat dry time prior to painting the second and third coats on the remaining steel surfaces.*

~~All paint coatings shall have a dry film thickness not less than 80% of the required dry film thickness.~~

If using the partial paint system in accordance with 619.09(b), all 90 degree edges shall be striped on each of the coats, and then repainted with the remaining steel surfaces. If specified, the stripe coat shall be allowed to dry to the manufacturer's recommended recoat dry time prior to painting the remaining steel surfaces. Painting techniques shall minimize dry overspray. Dry overspray shall be removed prior to application of other coatings and after application of the finish coat.

(f) Curing Time

The minimum curing time between coatings shall be 24 h for inorganic zinc primers and 8 h for the epoxy intermediate coat. The curing time will vary depending on the temperature and humidity. The inorganic zinc primer shall be cured to a minimum solvent resistance rating of 4 in accordance with ASTM D 4752 prior to the application of the epoxy intermediate coat. It shall be demonstrated that the inorganic zinc primer is in accordance with this requirement. The epoxy intermediate coat shall be cured in accordance with the manufacturer's recommendations prior to the application of the polyurethane finish coat. The polyurethane finish coat shall be applied within 12 calendar days of application of the epoxy intermediate coat.

The curing time of all other paint systems or coatings shall be in accordance with the manufacturer's recommendations.

(g) Stencil Identification

After the finish coat has been approved, project identification information shall be painted with a stencil in 2 in. (50 mm) black capital letters onto the outside of both facia beams, at the right end of the beam and near the end bent, which reads as follows:

_____
bridge number

_____
contract number

PAINTED _____
date

619.11 Shop Painting

All structural steel shall be cleaned in accordance with 619.08(c). ~~All technical data sheets containing manufacturer's recommendations and instructions shall be provided in the QCP and in accordance with ITM 803.~~

All structural steel, except for ASTM A 709, grade 50W (ASTM A 709M, grade 345W) steel, shall receive an inorganic zinc primer, including faying surfaces of high strength bolted connections and areas in contact with concrete. When shear connectors have been specified, the top of the *top* flange shall not be painted.

Surfaces, other than the contact surfaces described above, which are inaccessible after erection shall be painted in the shop with the full paint system required on the completed bridge.

Machine finished surfaces for sliding contact shall be coated with heavy grease as soon as practicable after being accepted, but before removal from the shop.

Erection marks may be painted on zinc painted surfaces. Shop painted beams shall not be loaded for shipment until the paint ~~is dry~~ *has been allowed to dry to the manufacturer's recommended dry to handle time*.

ASTM A 709, grade 50W (ASTM A 709, grade 345W) steel shall be left unpainted, except as shown on the plans. Surfaces, when specified, shall be painted in accordance with 619.09(a), except the finish coat shall be in accordance with 909.02(e).

619.12 Field Painting New Steel Bridge

All structural steel which has been painted with inorganic zinc primer in the shop, except for steel contact surfaces and surfaces to be in contact with concrete, shall be painted with the other coatings specified for structural steel paint system in accordance with 619.09(a). All steel surfaces which become inaccessible to field painting after final erection shall be painted with all coats of structural steel paint system before structural steel ~~in~~ *is* erected.

If application of the inorganic zinc primer on a steel surface is not permitted in the shop before erection of the bridge, the surfaces which are exposed shall be cleaned in accordance with 619.08(a), 619.08(b), and 619.08(c). These surfaces shall then be painted with the structural steel paint system after erection.

Surface areas where the inorganic zinc primer was damaged during shipping, handling, and erection shall be cleaned in accordance with 619.08(a), 619.08(b), and either 619.08(d) or 619.08(h). Likewise, all bolt and field connections shall be cleaned in the same manner. All the damaged areas, and bolt and field connections shall then be painted with the inorganic zinc primer applied in the shop. This requirement will not apply to temporary steel bridges.

Where steel surfaces have been painted with the full paint system and the paint coatings have been damaged, the affected steel surface areas shall be cleaned in accordance with 619.08(h). Structural steel paint system shall then be re-applied.

619.13 Painting Existing Steel Bridges

The surfaces to be cleaned and painted shall include the surfaces of all steel members of the superstructure, substructure, floor beams, stringers, plates, castings, bearing assemblies, ornamental handrails, lattice work, and other steel appurtenances.

If the contract specifies clean steel bridge, the bridge steel shall be cleaned in accordance with 619.08(a), 619.08(b), and either 619.08(d) or 619.08(h). The structural steel paint system in accordance with 619.09(a) shall be used for painting.

If the contract specifies clean steel bridge, partial, the bridge steel shall be cleaned in accordance with 619.08(a), 619.08(b), and either 619.08(d), or 619.08(g), or 619.08(h). The partial paint system in accordance with 619.09(b) shall be then be used for painting.

619.14 Drain Castings Treatment

Drain castings shall be satisfactorily cleaned. The castings shall not be shot-blasted. If castings are sandblasted, a brush blast technique shall be used in accordance with 619.08(f).

The drain castings shall be painted with a black finish coat in accordance with 909.02(c).

~~**619.15 Claims**~~

~~No claim shall be made for damage, including but not limited to, damage for delay, increased expense, maintenance, start up costs, additional costs due to passage of time arising out of a dispute, or work stoppage relating to whether a surface was adequately cleaned or painted.~~

~~No claim shall be made due to a greater amount of paint used in excess of the minimums required by the contract or for the stoppage of work. Each bridge shall be inspected before bidding for the exact type of primer that exists on each bridge.~~

619.~~16~~ *15* Responsibility for Damage

Unless otherwise permitted by the Engineer in writing, ~~the Contractor or subcontractor shall provide~~ full containment shall be provided when performing the surface preparation operation and when applying all coats of paint (except primer coats) with spray equipment. All persons and property shall be protected from damage or injury from the surface preparation operations~~, paint,~~ and painting operations *by providing containment as described in the QCP*. Persons and property shall include, but not be limited to, pedestrians, vehicles, and other traffic upon or underneath a bridge, all portions of the bridge superstructure and substructure, and all adjacent property. The Contractor shall be responsible for damages in accordance with 107.17.

619.16.1 ~~Location of Steel to be Painted~~ Bridge Types

~~The location of the steel to be painted on a bridge has been categorized into the following three types.~~ For the purposes of this specification, bridges will be identified by one of the following types. ~~There may be more than one type indicated per bridge.~~

(a) Type 1 – The steel to be cleaned and painted ~~at this location~~ is entirely beneath the bridge deck. A beam or girder bridge is a representative bridge.

(b) Type 2 – The majority of the steel to be cleaned and painted ~~at this location~~ is beneath the bridge deck. However some steel extends above, but not over, the bridge deck. A pony truss bridge is a representative bridge.

(c) Type 3 – The majority of steel to be cleaned and painted ~~at this location~~ is above and over the bridge deck. There is some steel to be painted beneath the bridge deck. A through truss is a representative bridge.

619.17 Method of Measurement

Cleaning~~,~~ and painting~~, and environmental control~~ will be measured by the square foot (square meter) of surface area for each bridge deck of each type as specified. The length of the structure will be the out-to-out length measured longitudinally along the centerline of the structure. The width of the structure will be the out-to-out width measured on a line perpendicular to the centerline of the structure.

~~Cleaning,~~ *Cleaning drain castings and caulking joints of lapping members* ~~and painting~~ will not be measured *for payment*.

If a bridge is advertised as having existing hazardous materials, no measurement will be made of the area covered by mill scale. For bridges advertised as having existing non-hazardous materials, the area of structural steel covered by mill scale will be measured for payment after a proper cleaning of the entire containment area or an agreed large portion there of and removing all other existing materials, including all paint and rust. The percentage of the area of structural steel covered by existing mill scale will be representative of this entire area. The ~~Pre~~ pre-established ~~Remedies~~ remedies for this ~~Changed~~ changed ~~Condition~~ condition apply in accordance with 104.02(d) and 619.18.

Floor drain extensions will be measured per each drain extended.

The estimated weight (mass), length, ~~and~~ number of steel spans*, surface area of steel,* and type of primer shown on the plans or in the Proposal book is incidental information. Such information is approximate only. The Department will not guarantee its accuracy.

619.18 Basis of Payment

Removal of paint ~~of~~ *from* an existing bridge will be paid for at the contract ~~lump sum~~ *unit* price *per square foot (square meter) of the surface area of the bridge deck* for clean steel bridge or clean steel bridge, partial, at the bridge number specified. The accepted quantities of existing steel bridges to be painted, or partial painted, whichever is specified, will be paid for at the contract ~~lump sum~~ *unit* price *per square foot (square meter) of the surface area of the bridge deck* for paint steel bridge or paint steel bridge, partial, at the bridge number specified.

(~~b~~ a) Pre-Established Remedies for Changed Conditions

1. Discovery of Hazardous Materials but No Mill Scale on a Site Advertised as Non-Hazardous

The payment will be an additional 25~~.0~~% ~~percent~~ of the ~~environmental control item as computed in 619.18(a)2 and~~ clean steel bridge item as computed in 619.18(~~a~~b)1~~,~~ ~~all~~ in accordance with 109.05 as payment for all additional costs incurred.

2. Discovery of Mill Scale but No Hazardous Materials on a Site Advertised as Non-Hazardous

If, on a bridge advertised as having existing non-hazardous materials and the presence of hazardous materials has not been confirmed by laboratory analysis, the area of structural steel covered by mill scale comprises greater than 15~~.0~~% ~~percent~~ of the area of structural steel in accordance with 619.17, additional compensation for the removal of the mill scale will be made as an adjustment to the clean steel bridge item in accordance with the following:

a. *For areas of structural steel greater than 15~~.0~~% ~~percent~~ and up to and including 25~~.0~~% ~~percent~~ of the area covered by mill scale, an additional payment of 15~~.0~~% ~~percent~~ of the clean steel bridge item as computed in accordance with 619.18(~~a~~b)1 will be made.*

b. *For areas of structural steel greater than 25~~.0~~% ~~percent~~ and up to and including 50~~.0~~% ~~percent~~ of the area covered by mill scale, an additional payment of 30~~.0~~% ~~percent~~ of the clean steel bridge item as computed in accordance with 619.18(a)1 will be made.*

c. *For areas of structural steel greater than 50~~.0~~% ~~percent~~ and up to and including 75~~.0~~% ~~percent~~ of the area covered by mill scale, an additional payment of 45~~.0~~% ~~percent~~ of the clean steel bridge item as computed in accordance with 619.18(~~a~~b)1 will be made.*

d. *For areas of structural steel greater than 75~~.0~~% ~~percent~~ of the area covered by mill scale, an additional payment of 60~~.0~~% ~~percent~~ of the clean steel bridge item as computed in accordance with 619.18(~~a~~b)1 will be made.*

3. Discovery of Hazardous Materials and Mill Scale on a Site Advertised as Non-Hazardous

If the laboratory analysis of a waste residue sample on a bridge advertised as having non-hazardous materials yields results indicating the presence of hazardous materials, the entire bridge shall be considered as having mill scale and the following ~~P~~pre-~~E~~established ~~R~~remedy for this ~~C~~changed ~~C~~condition in accordance with 104.02(d) shall apply. If agreed to in writing between the Contractor and the Department, the work shall proceed with the Contractor assuming all risks for removal of mill scale. An additional 55~~.0~~% ~~percent~~ of the ~~environmental control item as computed in 619.18(a)2 and~~ clean steel bridge item as computed in 619.18(~~a~~b)1~~,~~ ~~all~~ in accordance with 109.05 will be paid as additional compensation for the removal and disposal of the hazardous materials, the removal of the mill scale, the additional containment required, and all other incidental items associated with the removal of the hazardous materials and mill scale.

(~~a~~ b) Prices used in Pre-Established Remedies to Changed Conditions

The following prices will be computed and used as the price for the pay item identified below in all ~~P~~pre-~~E~~established ~~R~~remedies to ~~C~~changed ~~C~~conditions referenced in this section.

1. *The price for the clean steel bridge item, per bridge, used in all ~~P~~pre-~~E~~established ~~R~~remedies to ~~C~~changed ~~C~~conditions referenced in this section will be limited to the lesser of the following:*

   a. *70.0% ~~percent~~ of the sum of~~:~~ the clean steel bridge item and paint steel bridge item~~, and environmental control item~~ for that bridge; or*

   b. *the actual amount for the clean steel bridge item for that bridge shown in the Schedule of Pay Items.*

~~2. *The price for the environmental control item, per bridge, used in all Pre-Established Remedies to Changed Conditions referenced in this section will be limited to the lesser of the following:*~~

   ~~a. *8.0% percent of the sum of: the clean steel bridge item, paint steel bridge item, and environmental control item for that bridge; or*~~

   ~~b. *the actual amount for the environmental control item for that bridge shown in the Schedule of Pay Items.*~~

Drain extensions will be paid for at the contract unit price per each.

~~If the contract includes a pay item for maintaining traffic, such work will be paid for at the contract lump sum price for maintaining traffic, at the bridge number specified.~~

~~Environmental control devices required when cleaning and painting existing steel bridges will be paid for at the contract lump sum *unit* price *per square foot (square meter) of surface area of the bridge deck* for environmental control at the bridge number specified.~~

Payment will be made under:

Pay Item	**Pay Unit Symbol**
Clean Steel Bridge, *Type* ____, *QP-* ____, *Str. No.* ___, ~~Br. No. ____~~	~~LS~~ *SFT (m2)*
Clean Steel Bridge, Partial, *Type* ____, *QP-* ____, *Str. No.* ____, ~~Br. No. ____~~	~~LS~~ *SFT (m2)*
Drain Extension	EACH
~~Environmental Control, *Type* ____, Br. No. _____~~	~~LS~~ ~~*SFT (m2)*~~
~~Maintaining Traffic, Br. No. _____~~	~~LS~~
Paint Steel Bridge, *Type* ____, *Str. No.*____~~, Br. No. _____~~	~~LS~~ *SFT (m2)*
Paint Steel Bridge, *Partial, Type* ____, *Str. No.*____~~, Br. No. ___~~	~~LS~~ *SFT (m2)*

The cost to prepare a QCP shall be included in the cost of ~~other~~ *the* pay items *of this section*. The cost of providing the Department with access to the bridge~~, the use of special cleaning methods, handling debris containers,~~ *and* seasonal or weather limitations~~, and~~ *shall be included in the cost of the pay items of this section. ~~The cost of all~~* labor, materials, and equipment required for maintaining traffic shall be included in the *~~maintaining traffic item in accordance with 801. If no maintaining traffic item is included in the contract, the~~* cost of other *~~all labor, materials, and equipment required for maintaining traffic shall be included in the cost of the~~* pay items *~~of this section.~~*

If a bridge is advertised as having existing hazardous materials, no additional payment will be made for the removal of mill scale. The cost of the removal of mill scale shall be included in the cost of clean steel bridge or clean steel bridge, partial.

If a bridge is advertised as having existing non-hazardous materials and the percentage of the area covered by mill scale is less than or equal to 15.0% ~~percent~~ of the total structural steel surface area of a bridge measured in accordance with 619.17 no additional payment will be made for the removal of mill scale. The cost of the removal of mill scale shall be included in the cost of clean steel bridge or clean steel bridge, partial.

The cost of furnishing all materials, equipment, and labor required for washing, solvent cleaning, scraping, steel brushing, or other acceptable methods for removing paint in the locations directed shall be included in the cost of clean steel bridge or clean steel bridge, partial. *The cost of cleaning drain castings shall be included in the cost of clean steel bridge or clean steel bridge, partial.*

The cost of providing containment in accordance with 619.~~16~~15 shall be included in the cost of the pay items of this section.

The cost of furnishing all materials *including caulk*, equipment, and labor to perform *caulking and* painting with structural steel *or partial* paint system shall be included in the cost of paint steel bridge ~~and to perform *caulking and* painting with partial paint system shall be included in the cost of~~ *or* paint steel bridge, partial. ~~Painting will not be paid for separately, unless so specified. The cost thereof shall be included in the cost of other pay items.~~ *The cost of furnishing all materials, equipment, and labor to perform painting of the drain castings shall be included in the cost of paint steel bridge or paint steel bridge, partial.*

The cost of all equipment, material, labor, testing, *use of special cleaning methods, shipping of waste residue samples, handling* and disposal of spent materials, *waste residues, waste residue containers* and *all other* debris *associated with environmental control and cleaning* shall be included in the cost of ~~environmental control *the pay items of this section*~~ *the clean steel bridge or clean steel bridge, partial pay item*. ~~No additional payment will be made for delays from all operations undertaken for this work. The absence of an environmental control pay item shall not negate the Contractor's responsibility for complying with the environmental control requirements in all phases of this work. *If a pay item for environmental control is not included in the contract, the cost of all aspects of environmental control shall be included in the cost of the pay items of this section.*~~

REVISION TO 2008 STANDARD SPECIFICATIONS

SECTION 619, CONTINUED.

Other sections containing specific cross references:

619.07
619.06 Pg 392

619.08
619.10 Pg 398

619.07(b)1
619.07(a) Pg 393

619.08(h)
619.12 Pg 401

619.07(b)4
619.07(b)5 Pg 396

General Instructions to Field Employees
Update Required? Yes
By - Addition
Frequency Manual
Update Required? No

Recurring Special Provisions potentially affected:

709-M-019

Standard Sheets potentially affected:

704-BDCG-05

Motion: Mr. Reilman
Second: Mr. Keefer
Ayes: 10
Nays: 0

Action: Passed as revised

_x_ RSP Effective: Sept. 2008 Letting
RSP Sunset Date: _____
___ RPD Effective: _____ Letting
_x_ 2010 Standard Specifications Book
___ 20__ Standards Edition
___ 20__ Design Manual
___ Technical Advisory

Received FHWA Approval? Yes

INDIANA DEPARTMENT OF TRANSPORTATION

DRIVING INDIANA'S ECONOMIC GROWTH

Design Memorandum No. 08-__
Technical Advisory

February 5, 2008 DRAFT

TO: **All Design, Operations, and District Personnel, and Consultants**

FROM: **_____**
Anthony L. Uremovich
Design Resources Engineer
Production Management Division

SUBJECT: **Painting Structural Steel; Bridge-Deck Drains**

ADDS: ***Indiana Design Manual*** **Section 17-4.11**
REVISES: ***Indiana Design Manual*** **Section 33-2.04**

EFFECTIVE: **_____, 2008, Letting**

PAINTING STRUCTURAL STEEL

If all of the structural steel on a bridge is to be painted, the applicable pay items are as follows:

~~619-xxxxx Environmental Control, Type ____~~
619-xxxxx Clean Steel Bridge, Type ____, QP-____, *Str No.* ____
619-xxxxx Paint Steel Bridge, Type ____, *Str No.* ____

If only a portion of the structural steel on a bridge is to be painted, the applicable pay items are as follows:

~~619-xxxxx Environmental Control, Type ____~~
619-xxxxx Clean Steel Bridge, Partial, Type ____, QP-____, *Str No.* ____
619-xxxxx Paint Steel Bridge, Partial, Type ____, *Str No.* ____

The pay unit for all of the pay items listed above is square foot (square meter) and is computed as the surface area of the bridge deck (out-to-out coping X out-to-out bridge floor) for each type listed below.

The "Type ____" designation refers to the location of the steel to be painted. The following types are available:

Type 1 – the steel to be painted at this location is entirely beneath the bridge deck. A beam or girder bridge is a representative bridge. Type 1 is the most common.

Type 2 – the majority of the steel to be painted at this location is beneath the bridge deck. However some steel extends above, but not over the bridge deck. A pony truss bridge is a representative bridge.

Type 3 – the majority of the steel to be painted at this location is above and over the bridge deck. There is also some steel to be painted beneath the bridge deck. A through truss is a representative bridge.

A bridge ~~may have more than~~ *should have only* one "Type" designation. For example a through truss with beam approach spans would have ~~both~~ a ~~Type 1 and~~ Type 3 designation ~~and would have two pay items for Environmental Control, Clean Steel Bridge, and Paint Steel Bridge for that particular bridge.~~

The "QP-____" designation in the cleaning items refers to the certification level of the contractor. If any portion of the bridge being cleaned was constructed before 1995, the QP-2 designation should be used. If the entire bridge consists of new steel or was constructed after 1994, the QP-1 designation should be used.

~~If more than one bridge is to be painted on a contract, a~~ *A* supplemental description of ~~*Br. No.*~~ *Str. No.* __ should be added to each of the above pay items, to correspond to the bridge file numbers and bridge numbers used in the list of pay items identified in Recurring Special Provision 101-B-042.

A pay item for maintaining traffic, code number 801-06775, pay unit lump sum, should be used. A supplemental description, ~~*Br. No.*~~ *Str. No.* ___, should be included ~~if more than one bridge is to be painted on a contract~~. *Also, corresponding pay items for other maintaining traffic items typically paid separately, such as construction signs, should be included.*

If only the bearings, end diaphragms, beam ends, etc., are to be treated, the pay items listed above for painting a portion of the structural steel should be used. Additional clarification should be provided via a unique special provision, or details should be shown on the plans.

The number of bridges in one contract should be limited to not more than three sites. This will result in more contracts, but it should result in more competitive bidding. It will also provide a better opportunity of completing the contract within the temperature and humidity restrictions and within the construction season. The total weight of steel per bridge and surface area that is to be painted, listed per bridge should also continue to be included in the contract.

jr:alu

[P:\Structural Services\Design Memos\08DkDr-ta.doc]

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED:

Current field office specification is in several locations including the 2008 SS and 5 Recurring Special Provisions. Additionally, industry has requested we streamline the spec and make it clearer what is being bid.

PROPOSED SOLUTION:

Create a new RSP that will encompass all current specs for field office, laboratory, computers, etc. The RSP will delete current sections 105.17 and 106.04 and place the new spec in the 600 section. This is typically where other states have placed this work.

It is recommended that the new RSP be made effective with July 2008 lettings and that it be incorporated into the 2010 SS.

APPLICABLE STANDARD SPECIFICATIONS: Current 105.17 & 106.04

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: Section 2.13

APPLICABLE RECURRING SPECIAL PROVISIONS: 105-C-071b, 105-C-207, 105-C-208, 105-C-216, 105-C-217

Submitted By: Ron Heustis

Title: Manager

Organization: INDOT, Construction Management

Phone Number: 317-234-2777

Date: March 17, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT?

This proposal is the result of an ad hoc committee consisting of Bill Bonning, Mike Jenkins, Mick Sandefer, Sheri Meyerhoff, Don Thornton, Roland Fegan and Ron Heustis. It has been reviewed by Industry thru ICA.

Item No. 08-9-2
Mr. Heustis
Date: 4/17/08

PROPOSED NEW RECURRING SPECIAL PROVISION

628-R-XXX FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS AND OFFICE MACHINES

(Adopted XX-XX-XX)

The Standard Specifications are revised as follows:

SECTION 105, LINE 593, DELETE AND INSERT AS FOLLOWS:

105.17 ~~Field Office~~ *Blank*

SECTION 105, DELETE LINES 594 THRU 954.

SECTION 106, LINE 168, DELETE AND INSERT AS FOLLOWS:

106.04 ~~Field Laboratory~~ *Blank*

SECTION 106, DELETE LINES 169 THRU 173.

SECTION 628, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 628 – FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS AND OFFICE MACHINES

628.01 Description

This work shall consist of providing the specified facilities, equipment, supplies and services in accordance with 105.03.

628.02 Field Office and Laboratory Requirements

When specified, the Contractor shall provide a field office, computer systems, office machines, field laboratory, services, equipment and supplies for the Department's exclusive use in accordance with the minimum requirements listed below.

(a) Field Office

The field office shall be located as mutually agreed by the Engineer and the Contractor. If a building exists within the limits of the right-of-way that is acceptable as a field office and the building is scheduled to be removed under the terms of the contract, the building may be equipped and furnished as the field office. A building within the right-of-way that is furnished under this specification shall be removed prior to the date of the last work and other acceptable facilities for the field office shall then be provided.

The field office may be a permanent building or a trailer and shall be of the type shown on the Schedule of Pay Items. The building or trailer furnished for the field office shall be in accordance with all applicable state and local codes and applicable IOSHA/OSHA requirements.

The field office shall be complete and ready for use by the Department, including all utility connections and specified computer systems, office machines, internet service, equipment and supplies, prior to the start of work. If the Contractor is unable to provide the permanent field office prior to the start of the work, the Engineer shall be notified in writing and the Contractor and the Engineer will agree on temporary field office arrangements prior to the start of work. A temporary field office will not be accepted by

the Department for more than two months, at which time a permanent field office shall be ready for the Department's use.

The field office shall at a minimum be the size listed below for the type field office specified.

1. *Type A – 400 sft (37 m^2)*
2. *Type B – 550 sft (51 m^2)*
3. *Type C – 650 sft (60 m^2)*

Minimum dimensions shall be 8 ft (2.4 m) wide and 7 ft (2.1 m) in height, from floor to ceiling. For a trailer, the calculation of minimum area will be based on the exterior box dimensions.

The office shall have a solid and level floor with no holes, a weatherproof roof and shall be dust-proof, and wind-tight. The field office shall have at least 2 doors for ingress and egress and shall have a minimum of 6 windows for a type A ~~or B~~ field office and 8 windows for a type B or C field office, not including any windows in the doors.

Each door shall have a satisfactory lock. At least one door must always be able to be unlocked and opened from inside the field office. If a padlock is used to secure a door, it shall be a high security type which is invulnerable to bolt cutters, hacksaws, hammers, or prybars. The padlock shall be mounted in such a manner that locking and unlocking the door is satisfactorily convenient. Installation of additional hardware to protect the lock or use of multiple padlocks on a door will not be permitted. However, additional hardware to receive the padlock will be acceptable. The Contractor shall furnish the number of keys to the office as directed by the Engineer. The Department will maintain a list of all Department personnel who are given keys.

Windows shall be hinged or sliding and have a minimum area of 5 sft (0.45 m^2) each. Windows shall be provided with satisfactory locks and screens. Windows, including windows in the doors, shall be provided with shades, blinds, or other approved coverings.

The field office shall have heating and air-conditioning equipment capable of maintaining a uniform temperature between 68°F and 80°F (20°C and 26°C).

The field office shall have a minimum 100 amp, 120/240 volt electrical service, shall have sufficient receptacles to satisfactorily accommodate all required electrical equipment without the use of extension chords or splitters and shall be provided with satisfactory office type lighting.

The field office shall include a minimum of one separately lockable storage area suitable to store a nuclear density/moisture gauge. The storage area shall have a minimum storage volume of 63 cu ft (1.3 m^3) with a minimum floor area of 9 sft (1 m^2).

If the field office is a trailer, the trailer shall be securely supported by adequate blocking. The blocking shall provide a foundation to prevent settlement. The trailer shall be secured to the ground with a trailer tie down system that is in accordance with all

state and local requirements. Each trailer shall be furnished with steps meeting IOSHA/OSHA requirements at each doorway.

The field office location shall be selected in order to provide satisfactory parking and trash disposal facilities for Department use. Parking spaces shall be either paved or surfaced with compacted aggregate, size No. 53, or other acceptable materials suitable for all-weather usage.

(b) Field Office Equipment and Supplies

The following minimum equipment and supplies shall be furnished for each field office of the type specified.

Office Type	***A***	***B***	***C***
Pencil Sharpener	*1*	*1*	*1*
Broom and Dust Pan	*1*	*1*	*1*
Six-hook Coat Rack	*1*	*1*	*1*
Toilet Facilities	*Yes*	*Yes*	*Yes*
Drinking Water	*Yes*	*Yes*	*Yes*
Fire Extinguishers	*1*	*2*	*2*
First-Aid Kit	*1*	*1*	*1*
Bloodborne Pathogen Kit	*1*	*1*	*1*
Smoke Detector	*1*	*1*	*2*
Carbon monoxide Detector	*1*	*1*	*1*
~~*Doors*~~	~~*2*~~	~~*2*~~	~~*2*~~
~~*Windows*~~	~~*6*~~	~~*8*~~	~~*8*~~
Shelving	*16 lft (4.9 m)*	*20 lft (6.1 m)*	*24 lft (7.3 m)*
Telephones	*2*	*2*	*3*
Voice Mail	*1*	*1*	*1*
Telephones Lines	*2*	*2*	~~*3*~~ *2*
File Cabinet Drawers	*4*	*8*	*12*
Office Desks & Office Chairs	*2*	*4*	*4*
Folding Office Tables	*1*	*2*	*2*
Chairs	*4*	*8*	*12*
Drafting Tables	*1*	*1*	*1*
Drafting Stools	*1*	*1*	*1*
Waste Paper Baskets	*2*	*4*	*4*
Cleaning Supplies	*Yes*	*Yes*	*Yes*
Calculators	*1*	*2*	*2*
Paper Shredder	*1*	*1*	*1*
Microwave Oven	*1*	*1*	*1*
Refrigerator/Freezer	*1*	*1*	*1*

The office and the equipment shall be furnished in a condition satisfactory to the Department.

Adequate quantities of basic hygiene and office cleaning supplies shall be provided. These supplies shall include, but are not limited to, hand soap, hand sanitizer, paper towels, toilet paper, window cleaner, all-surface cleaner, toilet disinfectant, toilet brush and a toilet plunger.

Potable drinking water with both hot and cold water capabilities shall be furnished. Drinking cups and paper towels shall be provided.

Fire extinguishers shall be five-pound, Class ABC or higher rated and shall be maintained in a fully charged and operable condition and shall meet all IOSHA/OSHA requirements.

First-aid kits shall meet the requirements of ANSI Z308.1 current at the time of letting.

Shelving shall have a minimum width of 10 in. (250 mm).

At least one telephone shall be a cordless phone having a frequency of at least 900 MHz.

The telephone voice mail system shall be capable of providing both a minimum one minute outgoing message and 30 minute total recording time for incoming messages. It shall have a remote operation feature, which may be used ~~from~~ to retrieve, replay, erase, and save messages. An answering machine meeting these requirements may be substituted for the voice mail system.

Filing cabinets shall at a minimum be fire resistant steel filing cabinets with a class D or higher classification established by UL or Safe Manufacturers National Association. Cabinet drawers shall have a filing depth of 25 in. (635 mm). All cabinets shall have a lock and at least four drawers shall be fire proof.

Office desktops shall be at least 48 in. (1220 mm) wide and 25 in. (635 mm) deep. All desks shall contain at least two drawers, one of which shall be provided with a lock.

Folding office tables shall be a minimum size of 30 in. x 60 in. (760 mm x 1520 mm).

Office ~~desk~~ chairs shall be height adjustable and equipped with castors. ~~The remaining~~ Other required chairs may be stackable or folding chairs.

Drafting tables shall contain a tilt top work table for drafting purposes. Dimensions shall be at least 30 in. x 60 in. (760 mm x 1520 mm). The drafting stool shall be proportional to each drafting table.

Supplies to be furnished shall include all items required for proper operation of the required equipment. This includes, but is not limited to, operating manuals and paper supplies.

Calculators shall be electric powered, have a printer and a minimum 12-digit capacity.

The shredder shall have a minimum capacity of 12 sheets (20 lb paper), shall be capable of shredding paper clips and staples and shall include a 5 gallon capacity waste basket.

The microwave oven shall have a minimum 1.0 cu ft capacity with a minimum 1100 watts and shall have digital controls.

The refrigerator/freezer shall have a minimum combined capacity of 12 cu ft.

The field office and all equipment and supplies shall be maintained and replenished in a satisfactory manner during the term of the contract or until released by the Engineer. If the field office or required equipment and supplies are not maintained by the Contractor, the Engineer may withhold partial payments until the field office is operational to the Department's satisfaction.

(c) Field Office Computer System

The Contractor shall provide one field office computer system for the Department's exclusive use for each field office specified. The Contractor has the option to provide either ~~one~~ a desktop or ~~one~~ a laptop computer system ~~for each field office specified~~ in accordance with the minimum requirements listed below.

1. Field Office Desktop Computer System

a. Processor – Intel or AMD compatible, 2.0 GHz
b. Memory – 1.0 GB, ~~DDR2~~ – 533 MHz ~~SDRAM~~
c. Hard Drive – 60 GB, 5400 rpm
d. Optical Drive – 24X CD-RW ~~8x DVD +/- RW~~ drive
~~e. Media Drive – 3.5 in. floppy disk drive, internal or external~~
~~f~~ e. Ports – Two USB 2.0 compliant ports
~~g~~ f. Network/Wireless – Ethernet or wireless card to be compatible with the selected internet and office network connections
~~h~~ g. Graphics – Integrated graphics card
~~i~~ h. Monitor – 22 in. widescreen digital flat panel
~~j~~ i. Keyboard –USB enhanced multimedia keyboard
~~k~~ j. Mouse – USB 2-button scroll mouse

2. Field Office Laptop Computer System

a. Processor – Intel or AMD compatible, 2.0 GHz
b. Memory – 1.0 GB, ~~DDR2 –~~ 533 MHz ~~SDRAM~~
c. Hard Drive – 60GB, 5400 rpm
d. Module Bay Device – 24X CD-RW ~~8x DVD +/- RW~~ drive
~~e. Media Drive – 3.5 in. floppy disk drive, internal or external~~
~~f~~ e. Ports – Two USB 2.0 compliant ports
~~g~~ f. Network/Wireless – Ethernet or wireless card to be compatible with the selected internet and office network connections
~~h~~ g. Graphics – Integrated graphics card
~~i~~ h. Display – 15" XWGA LCD panel
~~j~~ i. Battery – 9 cell lithium ion
~~k~~ j. External Monitor – 22 in. widescreen digital flat panel
~~l~~ k. External Keyboard – USB enhanced multimedia keyboard
~~m~~ l. External Mouse – USB 2-button scroll mouse
~~n~~ m. Miscellaneous – One compatible port replicator with AC adapter, one additional AC adapter, one DC adapter and one padded carrying case

3. Computer Software

The Contractor shall provide software for the computer system in accordance with the minimum requirements listed below.

a. *Operating System Software – Windows XP Professional ~~(no substitution)~~*
b. *Productivity Software – Microsoft Office 2003 Small Business ~~SP2~~ and Adobe Acrobat Professional*
c. *Security Software – McAfee Virus Scan Plus*

All software shall ~~be the most current version and~~ include the most current updates and patches at the time the computer system is provided to the Department. The Contractor shall provide for installation of updates and patches for the operating system, productivity and security software during the term of use of the computer system by the Department. Updates and patches shall be provided by an automatic update method. ~~All installation media for the software and device drivers installed on the computer shall be provided to the Department during the term of use of the computer system.~~

The Department may install and maintain proprietary software on the computer in order to run the Department's construction management programs.

4. Miscellaneous Computer Requirements

The initial condition of the computer system shall be nearly pristine. All owner installed e-mail accounts, games, spyware, online services, applications, network or other profiles ~~shall be~~ previously set up on the system shall be removed prior to placement in the field office. If the system was provided for a previous Department contract, all software not specified shall be removed prior to placement in the current field office.

The Contractor shall provide an uninterruptible power supply (UPS), minimum 120 VA, 100 Watts and full time surge suppression for each field office computer system specified in the contract.

The Contractor shall provide all cables, connections and software required to connect the field office computer system to the printer and the scanner.

When more than one computer system is specified for a field office, the Contractor shall provide either an Ethernet or wireless office network to allow all computer systems in the field office to access the field office internet service, the printer and the scanner.

The Contractor shall provide appropriate dust covers for all field office desktop computer systems.

The Contractor shall provide all manuals necessary for operation of the computer system and software with the system and shall include all documentation normally furnished with the equipment and software when purchased.

The Department will be utilizing the computer system to run or access Department provided construction management software applications. These

applications are known to run on Intel and AMD compatible equipment when using the Windows XP Professional operating system. If the Department experiences problems running these applications due to ~~requirement~~ hardware or software compatibility, the Contractor shall replace the equipment to ensure compatibility to the satisfaction of the Engineer within five business days.

The computer system shall be maintained in good working order. If a portion of the system becomes defective, inoperable, damaged, or stolen, that portion shall be repaired or replaced within five business days after the Contractor is notified by the Engineer. If the computer system and related accessories are not maintained by the Contractor as required, the Engineer may withhold partial payments until the computer system is operational to the Department's satisfaction.

(d) Field Office Internet Service

The Contractor shall provide broadband internet service for the field office. Broadband internet service shall be capable of a minimum average upload speed of 350Kbps unless otherwise approved by the Engineer.

(e) Field Office Machines

The Contractor shall provide a fully operational copier, printer, document scanner and fax machine for the Department's exclusive use in the field office in accordance with the minimum requirements listed herein.

In lieu of separate copier, printer, scanner and fax machines, the Contractor may provide an all-in-one unit that meets all the requirements for any combination of the individual machines being provided. Separate machines shall be provided for those machines functions that are not included in an all-in-one type machine.

1. Copier

The copier shall be a dry ink copier capable of using plain paper and of making full size, black and white copies of letter, legal and ledger US paper size original documents. The copier shall be capable of reducing and increasing copy sizes. The copier shall have a self-feeding paper tray, an automatic document feeder and be capable of producing at least 12 copies per minute.

2. Printer

The printer shall be a laser printer compatible with the computer system provided by the Contractor for use by the Department in the field office. The printer shall be capable of printing single-sided, black and white letter and legal US paper size documents at a rate of 20 pages per minute and capable of automatic duplex printing.

3. Document Scanner

The document scanner shall be compatible with the computer system provided by the Contractor for use by the Department in the field office. The scanner shall be capable of scanning letter and legal size documents and shall have an automatic document feeder and be capable of ~~24-bit color and 1200~~ 600 dpi black and white resolution.

4. Fax Machine

The fax machine shall be connected to one of the required telephone service lines in the field office. The machine shall have an automatic document feeder with a 10 page

capacity and be capable of faxing letter and legal size sheets. It shall be able to automatically dial 40 preprogrammed fax numbers and have the capability to program at least 2 groups of numbers. The machine shall have a ~~16~~ 2 MB memory, shall be equipped with a telephone handset and be capable of automatic redial.

~~*In lieu of separate copier, printer, scanner and fax machines, the Contractor may provide an all-in-one unit that meets all of the individual requirements for the machines being provided.*~~

5. Miscellaneous Office Machine Requirements

The Contractor shall provide letter, legal and ledger size paper, ink cartridges and toner as required by the Engineer for the operation of each piece of equipment provided.

If any office machine becomes defective, inoperable, damaged, or stolen, that machine shall be repaired or replaced within five business days after the Contractor is notified by the Engineer. If any of the office machines are not maintained by the Contractor as required, the Engineer may withhold partial payments until the machine is operational to the Department's satisfaction.

(f) Field Laboratory

The field laboratory shall be located as mutually agreed by the Engineer and the Contractor. The laboratory shall consist of an acceptable building or trailer in accordance with 628.02(a) in which the Department will house and use equipment to perform testing procedures for the contract.

The following equipment and supplies shall be furnished for each field laboratory of the type specified. The equipment and supplies shall meet the requirements of 628.02(a) as applicable.

Laboratory Type	***A***	***B***	***C***
Broom and Dust Pan	*1*	*1*	*1*
Six-hook Coat Rack	*1*	*1*	*1*
Toilet Facilities	*Yes*	*Yes*	*Yes*
Drinking Water	*Yes*	*Yes*	*Yes*
Fire Extinguishers	*1*	*2*	*2*
First-Aid Kit	*1*	*1*	*1*
Bloodborne Pathogen Kit	*1*	*1*	*1*
Smoke Detector	*1*	*1*	*2*
Carbon monoxide Detector	*1*	*1*	*1*
~~*Doors*~~	~~*2*~~	~~*2*~~	~~*2*~~
~~*Windows*~~	~~*6*~~	~~*8*~~	~~*8*~~
Shelving	*16 lft (4.9 m)*	*20 lft (6.1 m)*	*24 lft (7.3 m)*
Telephones	*1*	*1*	*1*
Voice Mail	*1*	*1*	*1*
Telephones Lines	*1*	*1*	*1*
File Cabinet Drawers	*4*	*4*	*4*
Office Desks & Office Chairs	*1*	*1*	*1*
Folding Office Tables	*1*	*1*	*1*
Chairs	*2*	*2*	*2*

Waste Paper Baskets	*2*	*2*	*2*
Cleaning Supplies	*Yes*	*Yes*	*Yes*

If a field office is provided that is large enough to include the required space for the laboratory, the Engineer may agree to accept the field office for use as both office and laboratory, in which case the equipment and supplies listed for the laboratory will not be required.

If the field laboratory is a separate structure that is located directly adjacent to the field office, the toilet facilities, drinking water, telephones, voice mail/answering machine, telephone lines and cleaning supplies will not be required.

628.03 Additional Computer Systems and Mobile Internet Service

When specified, the Contractor shall provide the following computer systems and internet services for the Department's exclusive use.

(a) Additional Field Office Computer System

The additional field office computer system shall be either a desktop or laptop computer system in accordance with 628.02(c)1 or 628.02(c)2 except that the monitor for a desktop system may be a 19 in. flat panel and the external monitor for a laptop system will not be required. The requirements of 628.02(c)3 and 628.02(c)4 shall apply to each additional field office computer.

(b) Mobile Laptop Computer System

The mobile laptop computer system shall be in accordance with 628.02(c)2 except that the external monitor, integrated graphics card, external keyboard and port replicator with AC adapter will not be required. Mobile laptop computers will be used by the Department for contracts that do not include a field office. The requirements of 628.02(c)3 and 628.02(c)4 shall apply to each mobile laptop computer except that those requirements specifically for a field office computer will not apply.

(c) Mobile Internet Service

The mobile broadband internet service access card will be used by the Department in a laptop computer provided by either the Contractor or the Department.

The card shall connect to the laptop via a type II PC card slot, an express card slot or a USB 2.0 compliant port. The card and service shall be capable of a minimum average upload speed of 350 Kbps. The internet service rate plan shall include unlimited data and time usage with no roaming charge for national domestic use. All software necessary for the operation of the card shall be provided to the Engineer.

The Contractor shall not purchase any card or enter into any service agreement until authorized by the Engineer. The Engineer will provide a minimum of 10 business days notice prior to the date the card will be required.

628.04 Method of Measurement

Field office and field laboratory will be measured by the month for the specified type. Partial months will be rounded up to the next half or whole month. The Department will provide two weeks advanced notice prior to when the facility will be vacated.

If a field laboratory is specified and is included in the same space as the field office, the field laboratory will not be measured for payment.

Additional field office computer system and mobile laptop computer system ~~will be measured each.~~

~~———~~ *~~Mobile~~ and mobile internet service will be measured by the month. Partial months will be rounded up to the next half or whole month. The Department will provide two weeks advanced notice prior to when mobile internet service will no longer be required.*

628.05 Basis of Payment

Field office and field laboratory will be paid for at the contract unit price per month, complete in place until released.

Additional field office computer system, ~~and~~ mobile laptop computer system ~~will be paid for at the contract unit price per each.~~

~~———~~ *~~Mobile~~ and mobile internet service will be measured by the month.*

Payment will be made under:

Pay Item	***Pay Unit Symbol***
Field Office, _____ type	*MOS*
Field Laboratory, _____ type	*MOS*
Field Office Computer System, Additional	*~~EACH~~ MOS*
Mobile Laptop Computer System	*~~EACH~~ MOS*
Mobile Internet Service	*MOS*

The cost of all heating, cooling, electrical service, telephone service and other miscellaneous utility bills required for the field office or field laboratory shall be included in the cost of the field office or the field laboratory.

If a field office smaller ~~that~~ than the specified type is approved by the Engineer, a new unit price will be established for the smaller field office. The new unit price will be equal to the original contract unit price multiplied by the smaller floor area and divided by the specified floor area.

If a temporary field office is provided in accordance with 628.02, payment will be 65% of the unit price during the time the temporary field office is in use by the Department.

The cost of all materials and labor necessary to setup, secure, maintain and remove the field office, including all required equipment and supplies and any material required to provide parking, shall be included in the cost of the field office.

All costs necessary to provide the field office computer system, including the required software, manuals, peripherals and related equipment, technical support and miscellaneous computer requirements shall be included in the cost of the field office.

All costs necessary to establish, install and maintain field office internet service, including any required hardware, software, fees, monthly charges, setup, installation and technical support shall be included in the cost of the field office.

All costs necessary to provide the copier, printer, document scanner and fax machine, including setup, installation, all required connections to computer systems, technical support and miscellaneous office machine requirements shall be included in the cost of the field office.

All costs necessary to establish and maintain a field office network when one or more additional field office computer systems are specified shall be included in the cost of the field office.

All cost necessary to provide an additional field office computer system, including the required software, manuals, peripherals and related equipment and technical support shall be included in the cost of the additional field office computer.

All costs necessary to provide the mobile laptop computer system, including the required software, manuals, peripherals and related equipment, technical support and miscellaneous computer requirements shall be included in the cost of the mobile laptop computer.

All costs necessary to establish, install and maintain mobile internet service, including required hardware, software, fees, monthly charges, setup, installation and technical support shall be included in the cost of mobile internet service.

PROPOSED NEW RECURRING SPECIAL PROVISION

628-R-XXX FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS AND OFFICE MACHINES (CONTINUED).

Other sections containing specific cross references:

None

General Instructions to Field Employees
Update Required? Yes
By - Addition or Revision
Frequency Manual
Update Required? No

Recurring Special Provisions potentially affected:

105-C-071b, 105-C-207, 105-C-208, 105-C-216, 105-C-217

Standard Sheets potentially affected:

None

Motion: Mr. Heustis
Second: Mr. Andrewski
Ayes: 10
Nays: 0

Action: Passed as revised

_x_ RSP Effective: July 2008 Letting
RSP Sunset Date: _____
___ RPD Effective: _____ Letting
___ 20__ Standard Specifications Book
___ 20__ Standards Edition
___ 20__ Design Manual
___ Technical Advisory

Received FHWA Approval? Yes

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Box culvert information contained in 714 and in the recurring special provisions is outdated.

PROPOSED SOLUTION: Incorporate two longstanding recurring special provisions into the 714 section, rework this section to address all box culverts (oversize & regular size), and update the requirements that the box culverts be designed using LRFD methods.

APPLICABLE STANDARD SPECIFICATIONS: 714, 907.02, 907.05, 907.06, 910.01(b)5, 910.01(b)6, 910.01(b)10

APPLICABLE STANDARD DRAWINGS: 714-BCEX-01 & -02

APPLICABLE DESIGN MANUAL SECTION: New Section 31-4.05

APPLICABLE SECTION OF GIFE: new GIFE section 714

APPLICABLE RECURRING SPECIAL PROVISIONS: this proposal incorporates RSP 714-R-437 and 735-R-468 into the Standard Specifications

Submitted By: Anne Rearick

Title: Manager, Structural Services

Organization: INDOT

Phone Number: 317-232-5152

Date: March 18, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT? 700 Specification Subcommittee

The committee requested that in the future when recurring specifications that include design criteria are proposed to be adopted into the Standard Specifications, that the design criteria be added to the IDM and incorporated into the SS by reference to the IDM.

Industry requested that the use of BOXCAR design software be considered by the Department for use in culvert design. The Committee thought this could be accomplished in a relatively short period.

Item No. 08-9-3
Ms. Rearick
Date: 4/17/08

~~PROPOSED NEW RECURRING SPECIAL PROVISION~~

714-R-XXX CONCRETE BOX STRUCTURES

(Adopted XX-XX-XX)

The Standard Specifications are revised as follows:

SECTION 714, DELETE LINES 1 THROUGH 146.

SECTION 714, AFTER LINE 147, INSERT AS FOLLOWS:

SECTION 714 – CONCRETE BOX STRUCTURES

714.01 Description

This work shall consist of the construction of cast-in-place or precast concrete box drainage structures with 20 ft (6.1 m) span or less as measured along the roadway centerline, and such parts of similar structures composed of concrete in accordance with these specifications and 105.03.

714.02 Materials

Materials shall be in accordance with the following:

Bituminous Mastic Pipe Joint Sealer.....906.05
Chemical Anchor System.....901.05
Coarse Aggregates, Class A or Higher, Size No. 91.....904
Concrete.....702
Flowable Backfill.....213
Geotextile.....918.02
Joint Membrane System for Precast Reinforced Concrete Box Section.....906.06
Precast Reinforced Concrete Box Sections.....907.05
Precast Reinforced Concrete Headwalls and Wingwalls.....907.06
Reinforcing Bars.....910.01
Steel Welded Wire Reinforcement, Smooth and Deformed....910.01
Sealer.....909.09 or 909.10
Structure Backfill.....904

Cast-in-place concrete for wingwalls and headwalls shall be class A. Concrete for cast-in-place splices between an existing culvert and a precast reinforced concrete box section extension or used to seal existing culverts shall be class A. Cast-in-place concrete for footings shall be class B.

CONSTRUCTION REQUIREMENTS

714.03 General Requirements

Unless otherwise specified, the applicable requirements of 702 and 703 shall apply to the construction of box structures, box-structure extensions, and concrete parts of similar structures. Excavation and disposal shall be in accordance with the applicable requirements of 206. The areas designated for waterproofing shall be waterproofed in accordance with 702.23. All underground drains encountered during excavation for the

structure shall be perpetuated as dictated by field conditions. Drainage openings through masonry shall be in accordance with 702.16. Handling of box structures shall be in accordance with 907.05. Handling of wingwalls shall be in accordance with 907.06.

714.04 Design Requirements

(a) Box Sections

A box section shall be designed in accordance with ASTM C 1577 except that the area of reinforcement shall be in accordance with this section.

The box section shall be designed for HL-93 plus impact loading, in accordance with AASHTO Load Reduction Factor Design, LRFD Bridge Design Specifications.

Shop drawings shall be submitted in accordance with 105.02 for fabrication of a precast reinforced-concrete box structure greater than 12 ft. (3.6 m) span, or box culverts of a size not described in ASTM C 1577, or for precast-concrete headwalls, or wingwalls. The shop drawings for a precast reinforced-concrete box structure shall include all details, dimensions, and quantities necessary to construct the structure, and shall include, but not be limited to, structure section details showing all concrete dimensions and reinforcing bar requirements.

Detailed plans for falsework and centering will not be required.

If the structure is specified as having epoxy coated ~~reinforcing~~ reinforcement, all top slab ~~reinforcing~~ reinforcement defined as As2, As5, As6, and As7 in ASTM C 1577 in that structure shall be epoxy coated.

Minimum structural reinforcement area shall be at least 0.002 of the gross concrete area A_g or 0.125 in.^{2}/ft (265 mm^2/m), whichever is greater. The permissible variation in diameter of reinforcement shall be in accordance with the tolerances prescribed in the AASHTO specification for that type of reinforcement.

The minimum thickness of top slab, bottom slab, and sidewalls, shall each be 12 in. (300 mm) for structure sections greater than 12 ft. (3.6 m) span. Haunch dimensions shall be as described in ASTM C 1577.

Reinforcing bar splicing and spacing requirements shall be in accordance with the AASHTO LRFD Bridge Specifications, except as indicated herein. The concrete cover over the circumferential reinforcement shall be 1 in. (25 mm). However, for a box culvert with cover less than 2.0 feet (600 mm) in the outside top of the top slab it shall be 2 in. (50 mm).

(b) Precast-Concrete Headwalls and Wingwalls

Headwalls and wingwalls shall be designed based on a minimum equivalent fluid pressure of 40 lb/ft^3 (6.3 kN/m^3). If flowable backfill is to be used, the Contractor shall consider the effects of hydrostatic pressure on the wingwalls. Horizontal pressures shall be increased for sloping backfill surfaces and live-load surcharge. Footings shall be designed for the allowable soil bearing shown on the plans. Wingwalls and wingwall footings shall be designed in accordance with the soil parameters shown on the plans. Headwall connections and wingwall footings shall be checked for sliding and for

overturning. A headwall with bridge railing mounted on top and the anchorage of the headwall to the box-structure section shall be designed for the bridge railing test level shown on the plans. Concrete cover for headwall and wingwall reinforcement shall be a minimum of 2 in. (50 mm). Concrete cover for footing reinforcement shall be 3 in. (75 mm) for the top and sides, and ~~100 mm~~ 4 in. (~~4 in.~~ 100 mm) for the bottom.

All ~~reinforcing~~ reinforcement in headwalls shall be epoxy coated. Reinforcing bar splicing and spacing requirements shall be in accordance with the AASHTO LRFD Bridge Specifications, except as described herein. The maximum spacing for wingwall reinforcing bars shall be 18 in. (450 mm) for horizontal bars and 12 in. (300 mm) for vertical bars.

Shop drawings shall be submitted in accordance with 105.02 for fabrication of precast-concrete headwalls, or wingwalls. Shop drawings for precast concrete headwalls and wingwalls shall include, but not be limited to, the following information.

1. *Footing details showing all concrete dimensions, elevations, and ~~reinforcing~~ reinforcement sizes, ~~reinforcing~~ reinforcement bending diagrams, lengths, and spacings indicated. Footing plan and section views shall be provided. The actual soil bearing pressure shall be shown on the footing details sheets.*

2. *Design computations which show the effects of hydrostatic pressure on the structure.*

3. *Wingwall design computations and details showing all concrete dimensions, reinforcing bars, bar-bending diagrams, and anchorage details. Wingwall plan, elevation, and section views shall be provided.*

4. *Headwall details, showing all concrete dimensions, reinforcing bars, bar bending diagrams, and anchorage details. Headwall elevation and section views shall be provided.*

5. *Wingwall backfill type and limits.*

714.05 Erection Requirements

The soils in the bottom of the excavation shall be compacted in accordance with 715.04.

Where a precast footing is utilized, a 4 in. (100 mm) layer of coarse aggregate No. 53 in accordance with 301 shall be placed under the full width of the footing. All cast-in-place footings shall be given a smooth float finish. The footing concrete shall reach a compressive strength of 2,000 psi (13 800 kPa) or flexural strength in accordance with 702.24(c) before placement of the wingwalls. The surface shall not vary more than 1/4 in. in 10 ft (6 mm in 3 m) if tested with a 10 ft (3 m) straightedge.

Tapered handling holes shall be filled with material in accordance with 901.07 or 901.08 or with precast concrete plugs, which shall be secured with portland cement mortar or other approved adhesive, before backfilling. Drilled handling holes shall be

filled with portland cement mortar. Prior to backfilling, all holes shall be covered with joint wrap material with a minimum width of 9 in. (225 mm).

Structure backfill shall be placed and compacted in accordance with 211~~, or flowable backfill shall be placed in accordance with 213, as required~~. Backfill material shall be brought up uniformly on each side of the structure to the fill line shown on the plans.

The operation of equipment over a structure shall be in accordance with the structure manufacturer's recommendations.

714.06 Precast-Concrete Headwalls and Wingwalls

(a) Headwall Reinforcement Placement Relative to Top of Structure

The vertical headwall reinforcement shall be attached to the top of the structure by either drilling holes or precasting holes. A chemical anchoring material, if used, shall be one from the Department's List of Approved Chemical Anchoring Materials.

(b) Wingwall Placement

Each wingwall shall be set on either masonite or steel shims. A minimum gap of 0.5 in. (13 mm) shall be provided between the footing and the bottom of each wingwall. The gap shall be filled with a mortar in accordance with 707.09. Wingwalls shall be connected to the outside box-structure sections with bolted steel plates.

(c) Wingwall Repairs

Wingwalls shall be repaired, if necessary, due to imperfections in manufacture, or damage caused by handling or construction. Repairs will be acceptable if it is determined that the repairs are sound, properly finished and cured, and if the repaired wingwall is in accordance with the requirements herein.

(d) Sealing

Sealer shall be applied in accordance with 709 on the top surfaces of headwalls and wingwalls. It shall extend 5 ft (1.5 m) vertically down the face of each section or to the bottom of each section, whichever is less. Surface preparation and application procedures shall be as recommended by the sealer manufacturer.

714.07 Extension of Existing Structure

All pertinent requirements of this specification shall apply to extension of an existing box structure, slab-top structure, or arch structure. Such portions of the existing structure designated for removal shall be removed. All portions of the existing structure which are to remain in place and are damaged shall be repaired or replaced as directed. Those portions left in place which are wholly or partially filled with debris shall be cleaned out. Material removed shall be disposed of in accordance with the applicable requirements of 202.02.

Before removing concrete from an existing structure with wingwalls, the Contractor shall saw around the perimeter of the removal area on the interior and exterior of the existing structure a depth of 1 in. (25 mm). All existing ~~reinforcing~~ reinforcement ~~steel~~ in the top slab, bottom slab, and sidewalls exposed after concrete removal shall be cleaned and straightened in preparation for lapping with reinforcement

from adjacent new work. Where existing ~~reinforcing~~ reinforcement ~~steel~~ has deteriorated or been damaged during the removal operation, holes shall be drilled into the face of the existing structure to provide embedment for replacement reinforcing bars. The holes shall be of the diameter and ~~length~~ depth required by the manufacturer of the approved chemical anchor system. ~~shown on the plans or as directed and~~ The holes shall be cleaned prior to ~~placement~~ placing ~~of~~ the reinforcement and ~~an~~ the approved chemical anchor system.

No concrete shall be removed from an existing structure that has a headwall but no wingwalls. Reinforcing bars to tie the existing structure to the new culvert section shall be installed by drilling holes into the face of the existing structure to provide embedment for reinforcing bars. The diameter and depth of the holes shall be according to the recommendations of the manufacturer of the approved chemical anchor system. The holes shall be cleaned prior to placing the reinforcement and the chemical anchor system.

An existing structure shall be extended by one of the following methods.

(a) Precast Concrete Box Section Extension

A cast-in-place concrete splice shall be constructed as a transition between the existing structure and the precast extension. The splice reinforcement in the new precast extension shall be exposed on the tongue end of the precast box extension and shall be lapped 18 in. (450 mm) with the exposed existing structure ~~reinforcing~~ reinforcement ~~steel and with exposed reinforcing mesh from the extension~~ as shown on the plans. A precast box section with 18 in. (450 mm) of exposed ~~reinforcing~~ reinforcement on the tongue end shall be special order. Existing structure ~~reinforcing~~ reinforcement shall be cut off 1 in. (25 mm) from the face of the new precast extension.

If the existing tongue or groove joint end is in good condition and exactly matches the new precast concrete box section extensions, the new extension may be installed using the mating joint of the existing box sections. No cutting of the box or splicing of reinforcement is required. The joint between the new box section and the existing box section shall be sealed as directed below.

(b) Cast-In-Place Concrete Structure Extension

The reinforcing bars for the extension shall be directly lapped with the exposed reinforcement of the existing structure as shown on the plans.

714.08 Precast Reinforced-Concrete Box Section Joints

Precast reinforced-concrete box section joints shall be sealed as shown on the plans. A bituminous mastic pipe joint sealer system or self-adhering joint membrane systems shall be applied once the concrete surface temperature is above 40°F (5°C) or sufficient to allow adherence. The concrete surfaces shall be cleaned and dry prior to application of the mastic or membrane material. Heat may be applied to the concrete surfaces until they are in accordance with the temperature and dryness requirements. The mastic or membrane material shall be centered on both sides of the joint as it is being applied. After application, the geotextile or membrane material shall be rolled to avoid wrinkling. If the roll of geotextile or membrane material does not cover the full length of the joint, an overlap of at least 2 1/2 in. (65 mm) will be required to start the

next roll of material. The manufacturer's application instructions shall apply in addition to the above requirements.

~~714.09 Abandoning Existing Structure~~

~~If an existing structure is no longer needed, but does not require removal, it shall be filled with non-removable flowable backfill in accordance with 213. Existing headwall removal shall be as shown on the plans or as directed.~~

~~714.10~~ 714.09 Method of Measurement

Precast reinforced concrete box sections, precast epoxy coated reinforced concrete box sections, precast reinforced concrete box section extensions, and precast epoxy coated reinforced concrete box section extensions will be measured by the linear foot (meter), complete in place. Precast concrete headwalls and wingwalls will be measured by the square foot (square meter).

Cast-in-place concrete used in structures and structure extensions will be measured in accordance with 702.27. Reinforcing bars and epoxy coated reinforcing bars will be measured in accordance with 703.07. Structure backfill will be measured in accordance with 211.09. Flowable backfill will be measured in accordance with 213.08. Field-drilled holes will be measured in accordance with 702.27.

~~714.11~~ 714.10 Basis of Payment

The accepted quantities of cast-in-place concrete used in structures and structure extensions will be paid for at the contract unit price per cubic yard (cubic meter) for concrete, of the class specified, structures. Precast reinforced concrete box sections of the size specified will be paid for at the contract unit price per linear foot (meter). Precast epoxy coated reinforced concrete box sections of the size specified will be paid for at the contract unit price per linear foot (meter). Precast reinforced concrete box section extensions and precast epoxy coated reinforced concrete box section extensions of the size specified will be paid for at the contract unit price per linear foot (meter). Precast-concrete headwalls and wingwalls will be paid for at the contract unit price per square foot (square meter).

Reinforcing bars, plain or epoxy coated, will be paid for in accordance with 703.08. Geotextile or riprap will be paid for in accordance with 616.13. Structure backfill will be paid for in accordance with 211.10. ~~Flowable backfill will be paid for in accordance with 213.09.~~ Field drilled holes will be paid for in accordance with 702.28.

Payment will be made under:

Pay Item	***Pay Unit Symbol***
Concrete, _____, Structures (class)	*CYS (m3)*
Concrete Structure Extension, Precast Reinforced Concrete Box Sections, ____ ft (mm) x ____ ft (mm) (span / rise)	*LFT (m)*
Concrete Structure Extension, Precast Epoxy Coated Reinforced Concrete Box Sections, ____ ft (mm) x ____ ft (mm) (span / rise)	*LFT (m)*

Headwall ..... SFT (m2)
Structure, Precast Reinforced Concrete Box
Sections, ____ ft (mm) x ____ ft (mm) ..... LFT (m)
span rise
Structure, Precast Epoxy Coated Reinforced Concrete Box
Sections, ____ ft (mm) x ____ ft (mm) ..... LFT (m)
span rise
Wingwall ..... SFT (m2)

The cost of excavation except as provided in 206.11(a), expansion joint material, perpetuation of existing drains shown on the plans, ~~filling of existing structures, removal of existing structures,~~ removal of portions of existing structures, cleaning out old channels or structures, approved chemical anchor system, precast reinforced concrete structure joints, and necessary incidentals shall be included in the cost of the pay items in this section.

The cost of designing a box structure, headwalls, and wingwalls shall be included in the cost of the pay items of this section.

The costs of coring, testing, reinforcing bars, excavation, repairs, plugging core and handling holes, mortar, sealer, and necessary incidentals shall be included in the cost of headwall or wingwall. The cost of wingwall footing and the aggregate base under such footing shall be included in the cost of wingwall.

No additional payment will be made for carrying an underground drain through a structure or structure extension. However, no deduction will be made for the volume of concrete occupied by the drain pipe in a cast-in-place structure or structure extension.

No additional payment will be made for the repair or replacement of existing concrete damaged by Contractor operations.

SECTION 907, BEGIN LINE 9, INSERT AS FOLLOWS:

907.02 Reinforced Concrete Pipe

This pipe shall be in accordance with AASHTO M 170 (M 170M) for the specified diameters and strength classes. *Precast concrete units shall be from a source listed in the Department's List of Certified Precast Concrete Producers, in accordance with ITM 813.* Unless otherwise specified, pipe wall design and use of elliptical reinforcement in circular pipe are optional.

The pipe provided shall be in accordance with the class and D-load rating shown in the plans.

When the pipe listed below is specified or permitted, it shall be in accordance with the class noted.

Extra Strength Reinforced Concrete Pipe ..... Class IV
Heavy Duty Reinforced Concrete Pipe ..... Class V
Reinforced Concrete Pipe ..... Class III
Reinforced Concrete Sewer Pipe ..... Class II

SECTION 907, BEGIN LINE 67, DELETE AND INSERT AS FOLLOWS:

907.05 Precast Reinforced Concrete Box Sections

~~Box sections with 2 ft (0.6 m) of cover or greater shall be in accordance with AASHTO M 259 (M 259M) and box sections with less than 2 ft (0.6 m) of cover which are subject to highway loadings shall be in accordance with AASTHO M 273 (M 273M). Box sections furnished in accordance with AASHTO M 259 (M 259M) or AASHTO M 273 (M 273M) shall have a minimum 28 day compressive strength of 5,000 psi (34.5 MPa), as determined by concrete cores. Certification shall be in accordance with 907.02.~~

Precast concrete units shall be in accordance with ASTM C 1577 and shall be from a source listed in the Department's List of Certified Precast Concrete Producers, in accordance with ITM 813.

Not more than four holes may be cast or drilled, or otherwise neatly made in the shell of each piece of box section for the purpose of handling or laying. The holes shall be tapered unless ~~drilled,~~ *cored* ~~and the tapered holes shall be filled with portland cement mortar or with precast concrete plugs, which shall be secured with portland cement mortar or other approved adhesive, before backfilling. Drilled holes shall be filled with portland cement mortar~~.

907.06 ~~Blank~~ *Precast Reinforced Concrete Headwalls and Wingwalls for Box Structure or Three-Sided Structure*

Precast concrete units shall be from a source listed in the Department's List of Certified Precast Concrete Producers, in accordance with ITM 813.

Handling devices or holes will be permitted in each wingwall section. Not more than four holes shall be cast or drilled in each section for the purpose of handling or setting. The holes shall be tapered unless cored. Weep holes shall be provided in all wingwalls. Wingwalls shall be free of fractures and shall be given a finish in accordance with 702.21.

The concrete compressive strength for headwalls and wingwalls shall have a minimum 28-day compressive strength of 4,000 psi (27.6 MPa), as determined by compressive strength testing of concrete cylinders.

Structural steel used in bolted connections of headwalls or wingwalls to a box-structure section, or of wingwalls to a three-sided-structure section or spandrel wall, shall be in accordance with 910.02(a), and zinc coated after fabrication in accordance with ASTM A 153.

Bolts and studs shall be hot dipped in accordance with 910.02(g)1. Nuts shall be in accordance with ASTM A 563, Grade A, Hex style; unless specified otherwise. Washers shall be in accordance ASTM F 844, unless specified otherwise. Bolts, nuts and washers shall be hot dip zinc coated.

SECTION 910, BEGIN LINE 45, DELETE AND INSERT AS FOLLOWS:

~~5. Welded Steel Wire Fabric for Concrete Reinforcement~~

~~Welded smooth steel wire fabric for concrete reinforcement shall be in accordance with ASTM A 185, except as follows~~.

~~a. The wire used in manufacturing the fabric shall be as drawn, not galvanized, unless otherwise specified.~~

~~b. The fabric shall be furnished in flat sheets unless otherwise permitted or specified.~~

~~c. Weld shear tests of fabric will be performed on the test specimens obtained for testing tensile properties in accordance with the Frequency Manual. If there is weld shear failure, additional test specimens shall be obtained in accordance with ASTM A 185~~.

~~6. Welded Deformed Steel Wire Fabric for Concrete Reinforcement~~

~~Welded deformed steel wire fabric for concrete reinforcement shall be in accordance with ASTM A 497, except as follows.~~

~~a. The wire used in manufacturing the fabric shall be in accordance with ASTM A 496.~~

~~b. The fabric shall be furnished in flat sheets unless otherwise specified or permitted.~~

~~c. Weld shear tests of fabric will be performed on the test specimens obtained for testing tensile properties in accordance with the Frequency Manual. If there is shear failure, additional test specimens shall be obtain in accordance with ASTM A 497.~~

5. Steel Welded Wire Reinforcement, Smooth

Smooth steel welded wire reinforcement shall be in accordance with ASTM A 185, except as follows.

a. The wire used in manufacturing the welded wire reinforcement shall be as drawn, not galvanized, unless otherwise specified.

b. The welded wire reinforcement shall be furnished in flat sheets unless otherwise permitted or specified.

c. Weld shear tests of welded wire reinforcement shall be performed by the manufacturer on the test specimens obtained for testing tensile properties in accordance with the Frequency Manual. If there is weld shear failure, additional test specimens shall be tested in accordance with ASTM A 185.

6. Steel Welded Wire Reinforcement, Deformed

Deformed steel welded wire reinforcement shall be in accordance with ASTM A 497, except as follows.

a. The wire used in manufacturing the welded wire reinforcement shall be in accordance with ASTM A 496.

b. The welded wire reinforcement shall be furnished in flat sheets unless otherwise specified or permitted.

c. Weld shear tests of welded wire reinforcement shall be performed by the manufacturer on the test specimens obtained for testing tensile properties in accordance with the Frequency Manual. If there is shear failure, additional test specimens shall be tested in accordance with ASTM A 497.

SECTION 910, BEGIN LINE 146, DELETE AND INSERT AS FOLLOWS:

10. Dowel Bars

~~Dowel bars shall be plain billet steel in accordance with ASTM A 615, grade 40 (A 615M, grade 280), except the bend test and elongation requirements will not apply. The dowel bar area and weight (mass) for the nominal bar diameter shall be as follows~~

Dowel bars shall be in accordance with AASHTO M 254 and the metal core in accordance with AASHTO M 255, grade 60 (420). The dowel bar area and weight (mass) for the nominal bar diameter shall be as follows.

Nominal Bar Diameter, in. (mm)	Cross Sectional Area, in.^{2} (mm^2)	Weight (Mass) lb/ft (kg/m)
1 (25)	0.79 (510)	2.670 (3.973)
1 1/4 (32)	1.23 (794)	4.172 (6.209)
1 5/16 (33)	1.35 (871)	4.600 (6.846)
1 1/2 (38)	1.77 (1142)	6.008 (8.941)

Dowel bars shall be coated with an epoxy coating material selected from the list of approved Epoxy Coating for Steel. The coating thickness after cure shall be a minimum of 7 mils (175 µm). Dowel bars shall not have burring or other deformation restricting slippage in concrete. Dowel bar ends shall be saw cut. Chips from the cutting operation shall be removed from coated bars.

Dowel bars shall be furnished by selecting bars made by a coater and manufacturer on the list of approved Certified Reinforcing Bar Epoxy Coaters and in accordance with ITM 301. When shipped to the project site, the dowel bars shall be accompanied by the types of certifications specified in ITM 301 and in accordance with 916.

PROPOSED NEW RECURRING SPECIAL PROVISION

714-R-XXX CONCRETE BOX STRUCTURES (CONTINUED).

COMMENTS FROM COMMITTEE MEMBERS:

This item will not be a recurring special provision, but will be incorporated into the 2010 Standard Specifications Book. RSP 714-R-437 and 735-R-468 will be deleted when this item is adopted into the 2010 Book.

Other sections containing specific cross references:

General Instructions to Field Employees
Update Required? No

Frequency Manual
Update Required? No

Recurring Special Provisions potentially affected:

714-R-437
735-R-468

Standard Sheets potentially affected:

714-BCEX 01 & 02

Motion: Ms. Rearick
Second: Mr. Heustis
Ayes: 10
Nays: 0

Action: Passed as revised

___ RSP Effective: _____ Letting
RSP Sunset Date: _____
___ RPD Effective: _____ Letting
_X_ 2010 Standard Specifications Book
___ 20__ Standards Edition
___ 20__ Design Manual
___ Technical Advisory

Received FHWA Approval? Yes

Item No. 08-9-4
Ms. Rearick
Date: 4/17/08

REVISION TO STANDARD DRAWINGS

714-BCEX-01 Precast Box Culvert Extension
714-BCEX-02 Extension in Kind for Box Culvert

NOTE: Revisions are required for Standard Drawings also.

Other sections containing specific cross references:

None

Recurring Special Provisions potentially affected:

714-R-437
735-R-468

Motion: Ms. Rearick
Second: Mr. Heustis
Ayes: 10
Nays: 0

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y___ N___
By - Addition or Revision

Standard Sheets potentially affected:

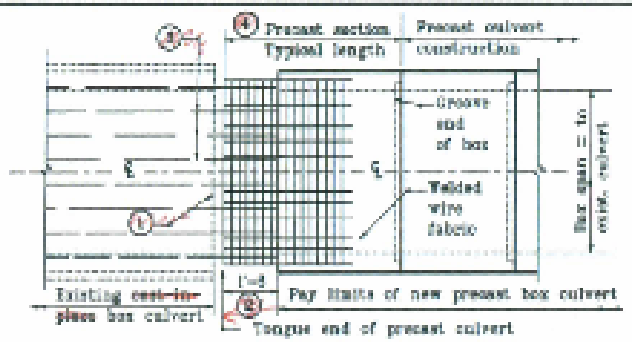
See Above

Action: Passed as revised

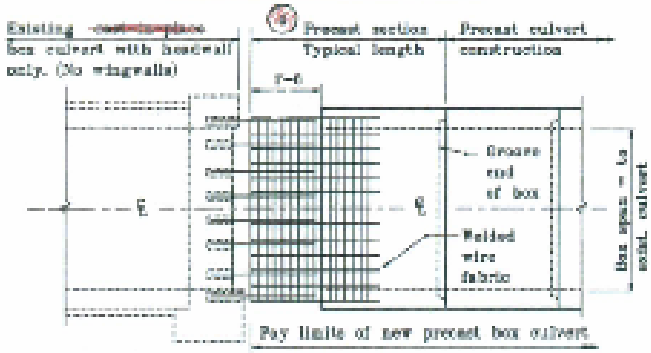
___ RSP Effective: _____ Letting
RSP Sunset Date: _____
___ RPD Effective: _____ Letting
___ 20__ Standard Specifications Book
_X_ 2010 Standards Edition
___ 20__ Design Manual
___ Technical Advisory

Withdrawn ____

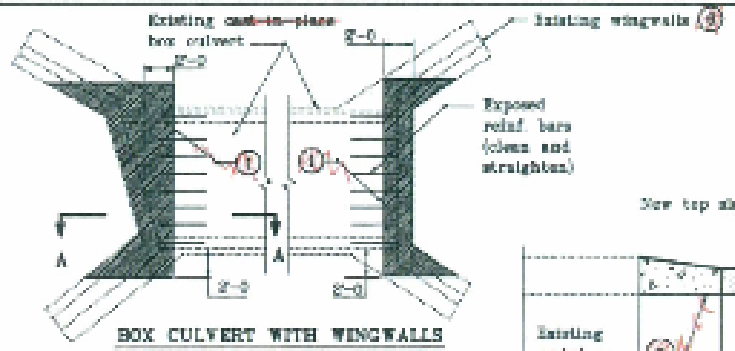
Received FHWA Approval? ____



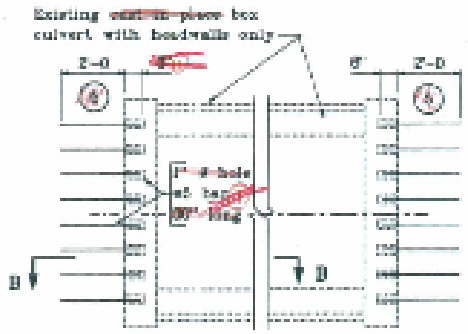
SECTION A-A CONNECTION VIEW



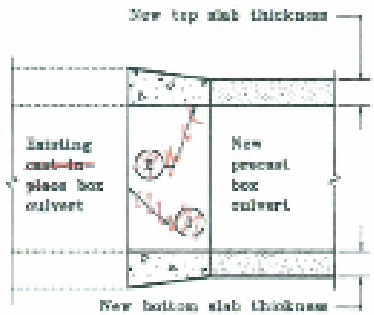
SECTION B-B CONNECTION VIEW



BOX CULVERT WITH WINGWALLS
EXTENSION PREPARATION



BOX CULVERT WITH HEADWALLS ONLY
EXTENSION PREPARATION



SECTION A-A AND B-B
(Showing cast-in-place section)

LEGEND :

- Removals
- Existing structures
- New elements of structures

NOTES:

1. Before removing existing concrete, saw around the perimeter of the removal area on the interior and exterior of the culvert barrel a depth of 1".
2. Exposed longitudinal steel in existing culvert shall be lapped 1'-6" with exposed mesh in precast box culvert.
3. Clean and straighten old bars in sidewalls top and bottom slabs. Cut existing bars off 1" from face of precast element.
4. Reinforcing mesh in the precast box culvert shall be exposed on the tongue end of box. Box culvert with exposed welded wire fabric for 1'-0 length shall be special order.
5. The holes for dowels shall be drilled along the perimeter of existing headwall a minimum of 6" into old concrete and the dowels firmly set in an approved chemical anchor system.
6. Remove existing wings as necessary.

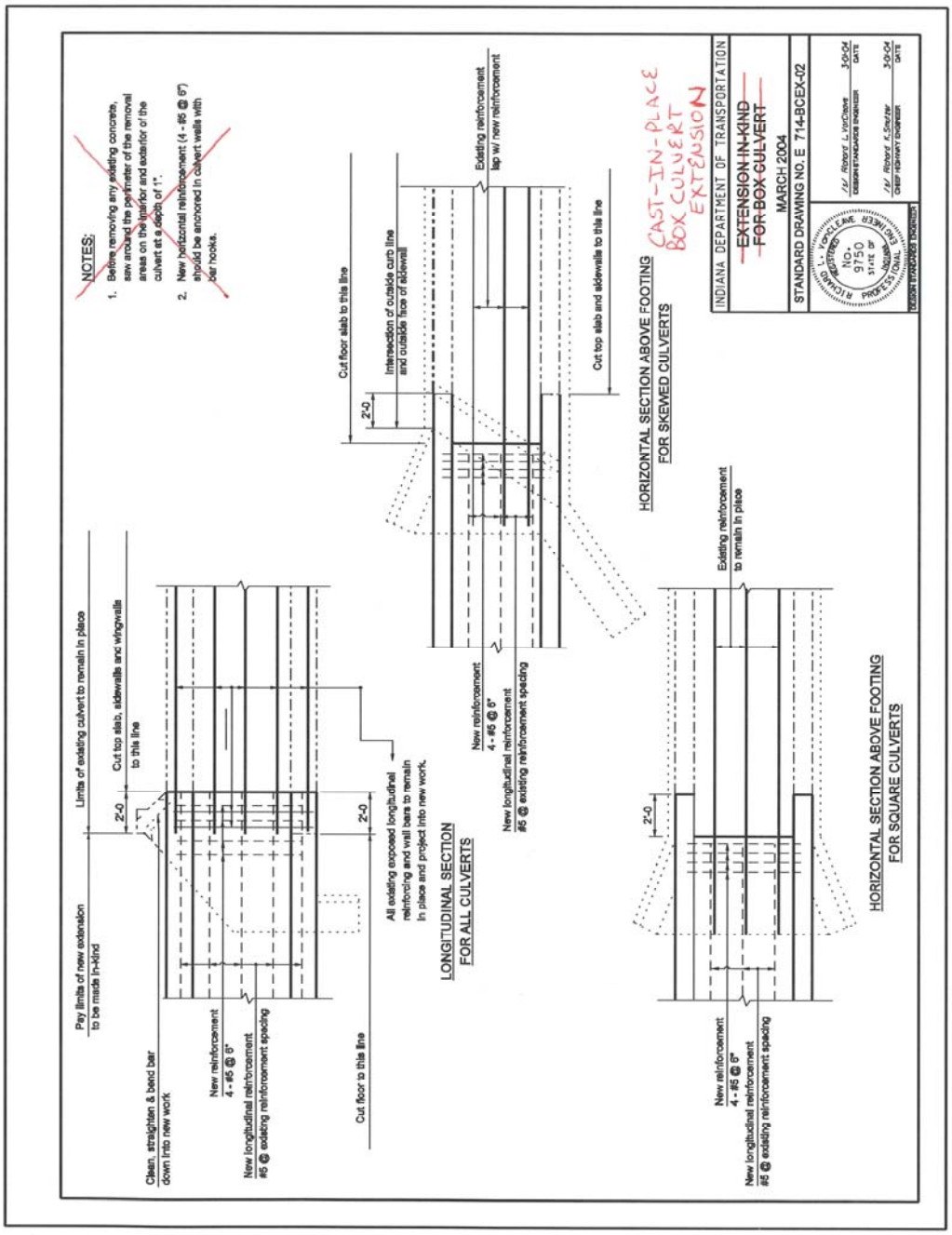
delete

INDIANA DEPARTMENT OF TRANSPORTATION

PRECAST BOX CULVERT EXTENSION

JANUARY 1998

STANDARD DRAWING NO. E 714-BCEX-01



In the Longitudinal Section for All Culverts, one “reinforcing” needs to be changed to “reinforcement”.